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Chapter 1 Introduction

1.1 Before You Begin

AdvaBuild Display Builder software (Display Builder) is a menu-driven, interactive utility program that you use to plan and design custom graphic displays in the operator station, that is part of an ABB Advant OCS automation system. The information provided in this manual is intended for you if you possess a general knowledge of the ABB Advant OCS with Master software automation system and have some experience working with process control software. For additional system-related information, refer to the instruction manuals listed in Section 1.5, Related Documentation.

Display Builder is available for purchase as an option for operator and engineering stations.

The Display Builder provides you with the added flexibility of creating your own custom displays. Such user-generated displays are especially helpful in tailoring graphic information to meet particular industry needs in a specific process environment. A well-designed display can minimize operating errors, more clearly illustrate and define critical process control parameters, and reduce training time for new operators.

1.2 Equipment Requirements

No extra equipment is required.

1.3 How to Use This Book

This book is organized into chapters and sections as shown in Figure 1-1.

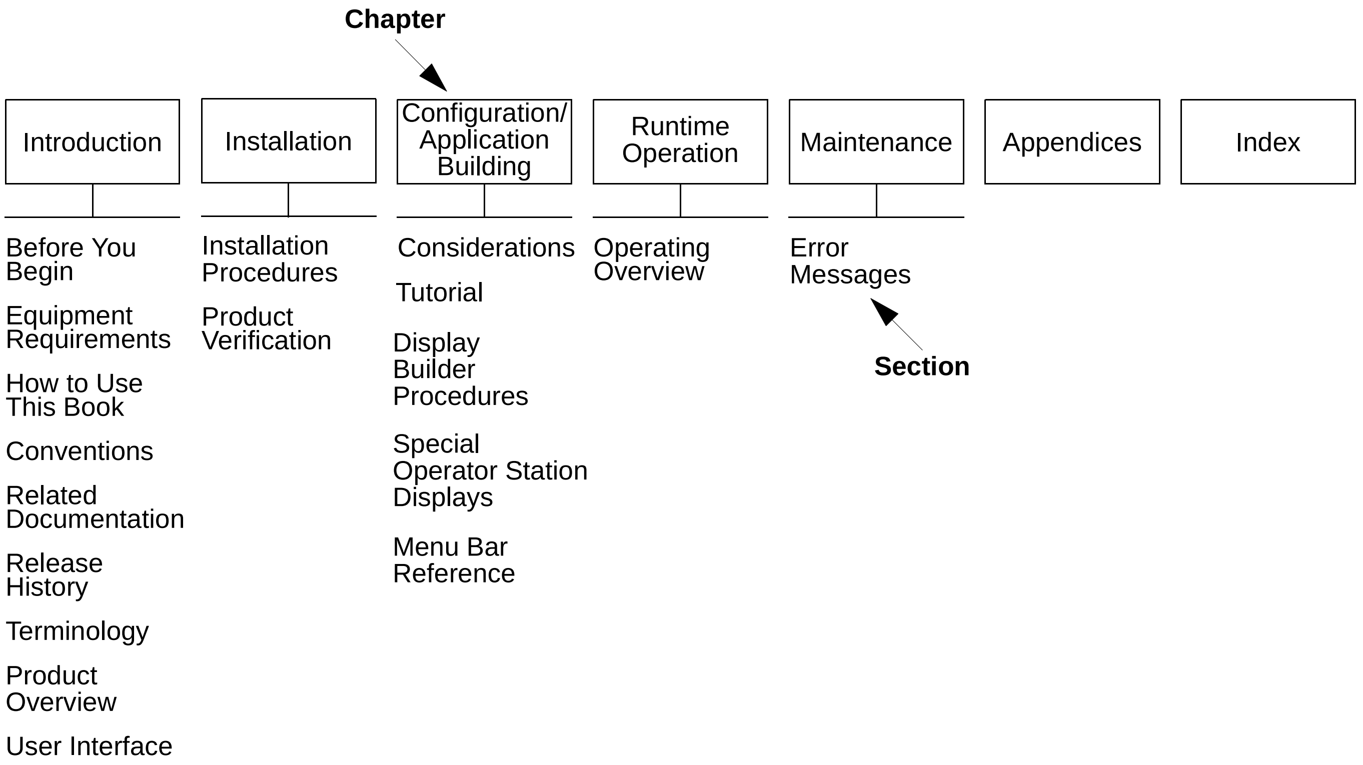


Figure 1-1. Organization of manual

Introduction

This chapter provides a general description of Display Builder, its uses and its interaction with the operator station.

Installation

The optional Display Builder is factory-installed in operator stations specified to have the software at the time of purchase. Installation instructions are, therefore, not included in this manual.

Configuration/Application Building

This chapter examines the features and functions of Display Builder and describes the procedures used in building a customer/operator display.

Runtime Operation

This chapter describes how the displays are presented in runtime, when they have been installed in the operator station.

Maintenance

Maintenance describes how errors are reported.

1.4 Conventions

The following conventions are used throughout this manual for the presentation of material:

- The words in proper names of screen elements (for example, the title in the title bar of a window, the label for a field of a dialog box) are initially capitalized.
- The names of keyboard keys are boldfaced.
  - Initial capital letters are used for the name of a keyboard key if it is labeled on the keyboard. For example, the **Return** key or **<Return>**.
  - Lowercase letters are used for the name of a keyboard key that is not labeled on the keyboard. For example, the **space bar**, **comma key**, and so on.
  - In descriptions, the word "key" is used in conjunction with its name. For example, pressing the **Return** key initiates the process.
  - In tables and procedures, angle brackets replace the word "key." For example, press **<Return>**.
  - A dash is used to indicate that you must simultaneously press several keys.
    For example, **<Ctrl-C>** indicates that you must hold down the **Control** key while pressing the **C** key.
  - The phrase "press and release" is used to indicate that you sequentially press several keys. For example, to close a window, press and release **<Alt>**, and then **<F4>**.
    This indicates that you press and release the **Alt** key, and then you press and release the **F4** function key.
- The names of push and toggle buttons are boldfaced.
  - Initial capital letters are used for the name of a push or toggle button labeled on the display. For example, the **OK** button.
  - In descriptions, tables and procedures, the word "button" is used in conjunction with its name. For example, pressing the **OK** button initiates the process.
- The names of menus and menu items are boldfaced.
  - Initial capital letters are used for the name of menus listed in the menu bar. For example, the **File** menu.
  - Initial capital letters are used for the name of menu items. For example, to open a new window, choose **New** from the **File** menu.

- System prompts/messages are shown in the Courier font, and user responses/input are in the boldfaced Courier font. For example, if you enter a value out of range, the following message is displayed:

  ```
  Entered value is not valid. The value must be 0-30.
  ```

  In a tutorial, you may be told to enter the string TIC132 in a field. The string is shown as follows in the procedure:

  ```
  TIC132
  ```

1.5 Related Documentation

Table 1-1 lists all documentation related to the AdvaBuild Display Builder.

Table 1-1. Related documentation

Category	Title	Description
Station	Advant Station 500 Series Engineering Station User's Guide	This book provides a general functional overview of the ES, guidance on where to find information on a specific subject, and instructions on station-level procedures such as start-up and shutdown, connecting peripherals, and so on. It also describes how Display Builder is started in the Engineering Station
Software	AdvaCommand Basic Functions User's Guide	This book give a detailed description of all basic functions in AdvaCommand, including User Interface, Event and Alarm, and System Status. *(Used for AdvaCommand)*
	AdvaCommand for Windows NT Basic Functions User's Guide	This book give a detailed description of all basic functions in AdvaCommand for Windows NT, including User Interface, Event and Alarm, and System Status. *(Used for AdvaCommand for Windows NT)*
	AdvaCommand User Interface Reference Manual	This book give a detailed description of all basic display elements and dialogs in AdvaCommand. *(Can be used for AdvaCommand as well as AdvaCommand for Windows NT)*
Other	The Computer Display Designer's Handbook (E Wagner), Studentlitteratur, Lund, Sweden, ISDN 91-44-27661-3	

1.6 Release History

The current version of the AdvaBuild Display Builder software has not been changed since version 1.7 of the Advant Station 500 Series Operator Station, when a new template for trend displays was included and NLS handling and support was provided.

AdvaBuild Display Builder software installed in an operator station with version 1.7 of the AdvaCommand for Windows NT software has the same functionality as AdvaBuild Display Builder software installed in an operator station with version 1.7 of the AdvaCommand software.

1.7 Terminology

The following is a list of terms associated with the operator station that you should be familiar with.

Term	Description
Pointer	The pointer is an upper left pointing arrow which indicates where operator input is entered on the screen. For instance, use the pointer to indicate the display button you want to select when you click the mouse button or the field to which you want to input information via the keyboard. The **hotspot** of the pointer is the upper tip of the arrow. You manipulate the pointer via a mouse, trackball or keyboard. The pointer appears as a **cross** in base and overlap displays in **runtime**.
Selecting Objects	You select an object on the display by positioning the pointer over the object and pressing the left mouse button or pressing the key **Select** (on the trackball or keyboard). Only a single click or press is required to make a selection.
Keyboard Focus	More than one window can be displayed at the same time; however, only one window is active at a time. Keyboard focus determines which area of the screen or which element in a window receives input from the keyboard. The active window is indicated by highlighted window borders and a title bar.

Term	Description
Buttons	All buttons are depicted as raised above the plane of the screen. When a button is pressed, it appears lower than the plane of the screen. All areas of the screen that cannot be selected appear flat (that is, in the plane of the screen).
Menus	When configuring, you use pull-down menus and pop-up menus. The pull-down menus are usually placed in a menu bar. A pop-up menu is displayed directly below the button you use to select it, and the menu remains open until you take an action or explicitly close the menu. The menu does not require you to keep the mouse button depressed until you locate and select the desired item. No menus are used for runtime operation.

Before beginning to work with Display Builder, it is important that you understand the basic terminology used throughout this manual. Some commonly used terms are defined below:

Term	Description
Workspace	The workspace is the portion of the workstation screen where you enter and manipulate graphic symbols and display elements to configure the display.
Display Element	Display elements are the dynamic building blocks of displays. A display element is a view of one or more process or system objects, for example, an analog input signal, a pump or a valve. It provides information about the objects and defines the interaction between them and the user. A display element can be as simple as a numerical value or as complex as a complete object display for a process object.
Menus	Menus contain all of the features and activities required for you to configure a user-built display. The Menu Bar, located in the upper portion of the workspace, is the primary vehicle for operator interaction with Display Builder.
Dialog Boxes	You call dialog boxes to the screen when you select various menu functions. Because they require you to select from a number of possible choices or, at the minimum, require you to provide an answer, dialog boxes are user-interactive.
Attributes for Display Element and Display	Display elements contain static and dynamic parts for presentation, a dialog part for both configuration and process control, and an interface part and data subscription part for data exchange with the objects. The display attributes include the background color, display type, linked displays and dynamic function keys.

1.7.1 Acronyms

The following acronyms are used in this document:

Acronym	Description
OCS	Open Control System
AS 500OS	Advant Station 500 Series Operator Station
operator station	Either an operator station with version 1.7 of the AdvaCommand for Windows NT software or an operator station with version 1.7 of the AdvaCommand software.

1.8 Product Overview

Display Builder is available for purchase as an option for an operator station. It is used to define custom operator displays.

1.9 User Interface

User interfaces provided are the same as those provided for operator stations. For further information, see *AdvaCommand Basic Functions User’s Guide* or *AdvaCommand for Windows NT Basic Functions User’s Guide*.

1.9.1 Mouse, Trackball and Buttons

A pointing device is the primary entry device you use to interact with Display Builder. The mouse, a freestanding pointer control device connected by a cable to the keyboard, positions the pointer rapidly and accurately. Move the mouse across the surface you are working on to move the pointer on the display.

The optional trackball is a freestanding pointer control device, connected by a cable to the keyboard, which you can also use to position the pointer rapidly and accurately. Rotate the large, plastic sphere on top of the device in the direction you want to move the pointer on the display. The trackball option is only available for an operator station with version 1.7 of the AdvaCommand software.

The pointing devices behave according to the OSF/Motif Style Guide. The buttons of the pointing devices are **Select** and **Drag**. The third button is not used in Display Builder. The following terms describe actions you can take using the mouse:

Press

Indicates pressing a mouse button without releasing it. Use this action together with the actions drag and release.

Release

Indicates releasing a mouse button after you press it.

Click

Indicates pressing and releasing a mouse button without moving the pointer.

Double Click

Indicates clicking twice quickly without moving the pointer. Use a double click to perform the default action of an object.

Drag

Indicates pressing a mouse button without releasing it and then moving the position of the pointer. The drag action ends with a release action. Use dragging when, for example, you are drawing a rectangle or selecting several elements in a list.

Dialogs

Dialogs consist of commands, questions and answers between the user and the system.

You use dialog boxes primarily during **configuration**. You call up the dialog boxes to the screen by selecting various menu functions. They are user-interactive because they require you to make a selection from a number of possible choices.

The dialog used during **runtime** is executing via dynamic function keys. The operator can request presentation of a display, start a dialog or activate an external application. The operator can also select an object for control manually and set parameters for the object. The dialog for each display is presented in 10 fields at the bottom of the display. The fields correspond to the 10 dynamic function keys on the operator's keyboard (only available for an operator station with version 1.7 of the AdvaCommand software).

Pop-up Menus

Pop-up menus consist of commands between the user and the system. These commands are the same as can be found on the functional keyboard.

Drag

Indicates pressing a mouse button without releasing it and then moving the position of the pointer. The drag action ends with a release action.

1.9.2 Keyboard

Use either a **Standard Keyboard** or a **Function Operator Keyboard**. Keys usable for the Display Builder include standard alphanumeric typewriter characters, special character keys (spacebar, CTRL (control), Shift, caps lock, number lock, etc.), a combined cursor control and text editing keypad. On the operator's keyboard there are also four pointer control keys.

The **Cursor Control Keys** features four cursor movement keys identified by large arrows pointing in four directions (**up**, **down**, **left** and **right**). The cursor control keys are used to navigate in tab groups, see Section 1.9.3, Dialog Boxes, and to move a selected object, a graphical object or a display element, pixel by pixel.

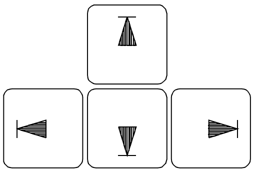


Figure 1-2. Cursor control keys

The **Pointer Control Keys** features four pointer movement keys identified by arrows pointing in the direction in which each moves the pointer (**up**, **down**, **left** and **right**). When you first press a **Pointer Control** key, the pointer moves one step in the direction indicated by the arrow. It then stops for 1/2 second. If you continue to depress the key, the pointer resumes its movement, and moves continously. You can position the pointer exactly and move rapidly across the screen using the arrow keys. By pressing a **Pointer Control** key and the **<Shift>** key simultaneously the pointer moves in larger steps.

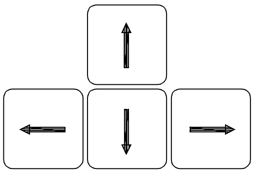
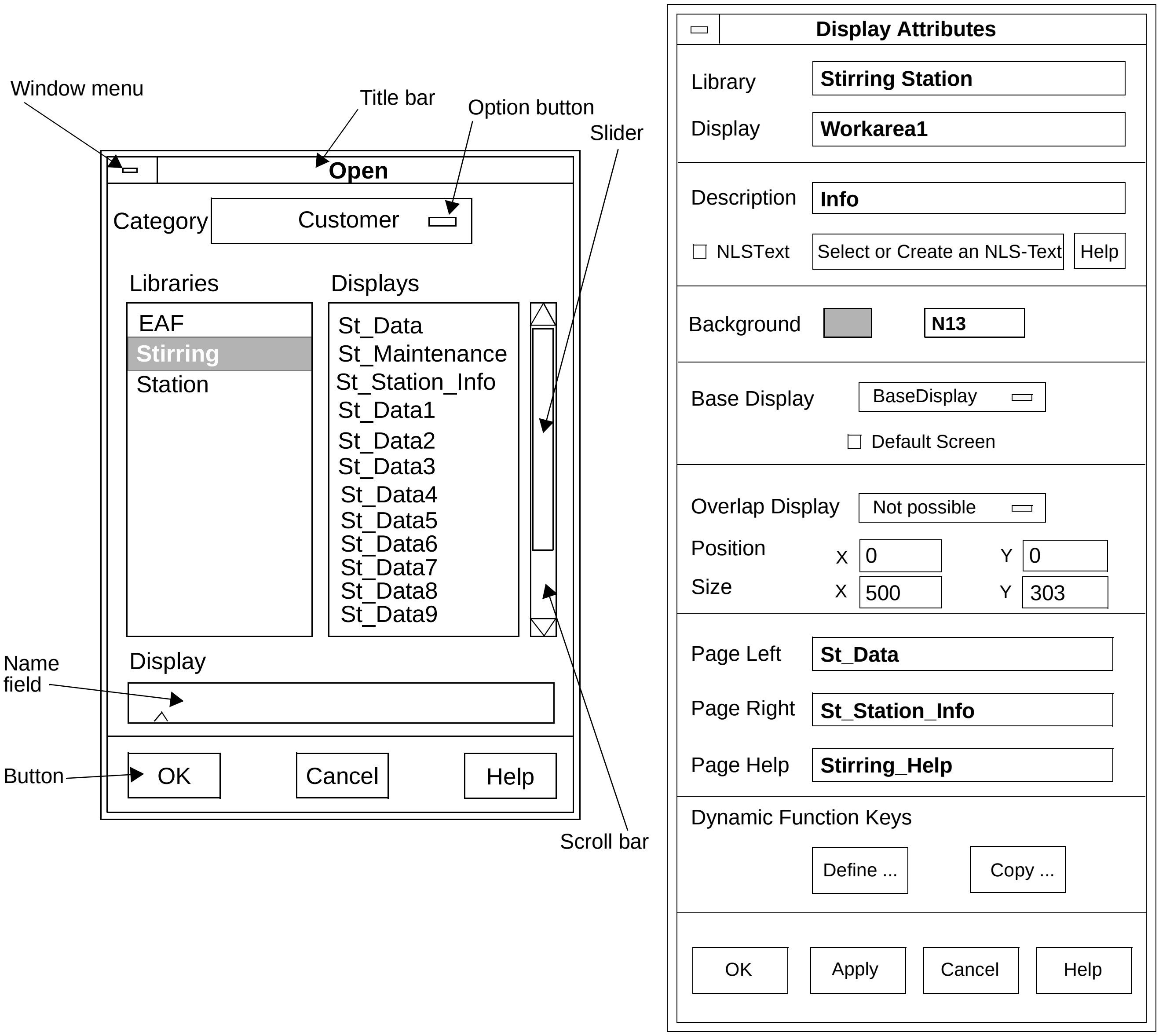


Figure 1-3. Pointer control keys

Use the <**Send**> and <**Enter**> keys to accept data you have entered in the display.

1.9.3 Dialog Boxes

Dialog boxes present information to the user and accept user input.



Open

Category: Customer

Libraries: EAF, Stirring, Station

Displays: St_Data, St_Maintenance, St_Station_Info, St_Data1, St_Data2, St_Data3, St_Data4, St_Data5, St_Data6, St_Data7, St_Data8, St_Data9

Display:

Display Attributes

Library: **Stirring Station**

Display: **Workarea1**

Description: **Info**

☐ NLSText: Select or Create an NLS-Text

Background: **N13**

Base Display: BaseDisplay

☐ Default Screen

Overlap Display: Not possible

Position: X 0, Y 0

Size: X 500, Y 303

Page Left: **St_Data**

Page Right: **St_Station_Info**

Page Help: **Stirring_Help**

Dynamic Function Keys

Figure 1-4. Examples of dialog boxes

Dialog boxes can have a list from which you can select items, for example, libraries, displays or templates. Using a **scroll bar**, you can scroll the visible area to view the entire list. A **slider** in the scroll bar indicates the relative position of the visible area. Generally, every dialog box also has a **name field**. If you click on a name in the (scrolled) list, the name is displayed in the name field. You can also enter a new name in the name field.

The dialog boxes can also have **option menus**. You can select from a set of choices with option menus. Pop up the option menu by pressing the mouse button on the **option button** located to the right of the menu label dialog, for example, to the right of the **BaseDisplay** label in the figure above. Drag to the desired alternative and release the mouse button.

Dialog boxes also contain buttons used to activate an operation. The label on a button indicates the action. The following actions are generally offered in the dialog boxes:

- **OK**

  Apply any changes made in the dialog box and remove the dialog box.

- **Apply**

  Apply any changes made in the dialog box. The dialog box remains.

- **Cancel**

  Remove the dialog box without performing any actions.

- **Help**

  Provide information about the dialog box and its functions.

All dialog boxes have a default action, which is indicated by an extra frame around the alternative. If you are about to choose the default value, you only have to press the **Return** key.

The input fields and the buttons belonging to each other are organized in **tab groups**. Within the tab group, you navigate using the cursor control keys on the keyboard. To enter a new tab group, use the **Tab** key on the keyboard. A tab group could, for example, be comprised of the **OK**, **Apply**, **Cancel** and **Help** buttons. This is not relevant when you use the mouse or trackball.

Each dialog box has a **Window menu** button located in its upper left-hand corner. To move the dialog box to a new location in the workspace, you can either select **Move** from the menu or you can press a mouse button on the title bar and drag to the desired place. If you double-click on the window menu button, you close the dialog box without performing any actions (**Cancel**).

1.9.4 Workspace

The workspace where static objects and display elements are created and manipulated to build the display occupies most of the screen display. The workspace is illustrated in Figure 1-5. Its features are described below.

The display name appears in the **Title Bar** at the top of each workspace. This name is assigned when you save the display at the end of a session.

The **Menu Bar** consists of pull-down menus providing features and activities you require to configure the display. See Section 3.3.1.3, Menu Bar, for additional information.

Use the button located to the right of the Title Bar to **maximize** the workspace area. The size of the workspace's rectangular outline depends on the template you have chosen. Base displays occupy the entire width of the monitor screen at runtime. Overlap displays can be stacked up in front of other displays at runtime. Screen size for overlap displays is specified when you set the display attributes as described in Section 3.3.1.4, Dialog Boxes. You can **resize** the workspace by selecting its border with the mouse button and dragging it to the desired size.

To **move** the workspace, press and hold the mouse button anywhere on the Title Bar, drag the Title Bar to its desired position, and then release the button.

You can also use the **Window menu** button to the left of the Title Bar to move and resize the workspace. **Close** the workspace by double-clicking on the **Window menu** button with the mouse button.

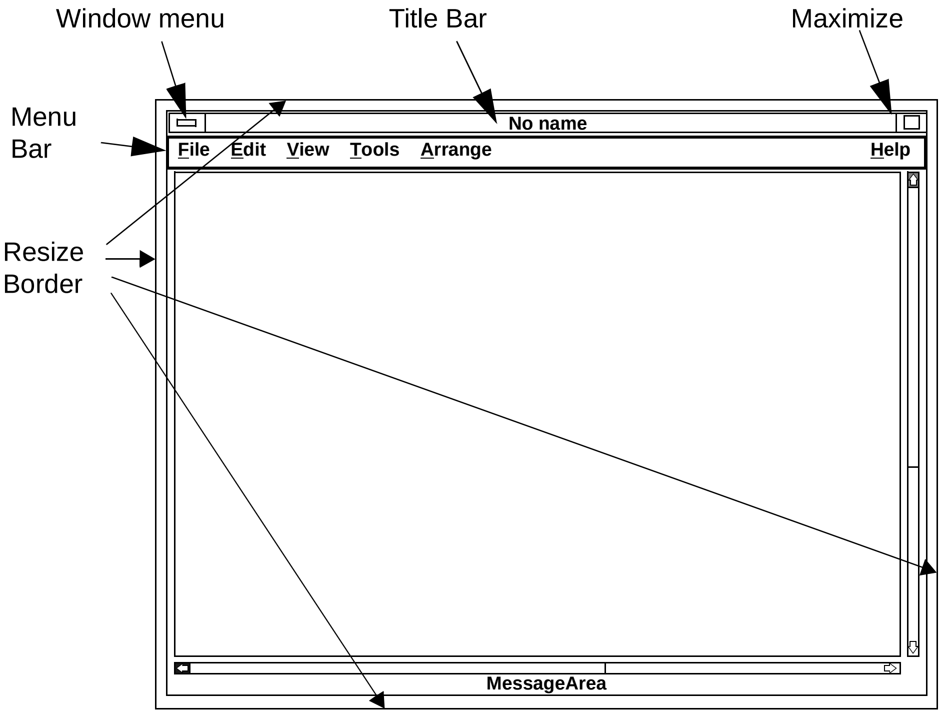


Figure 1-5. Empty workspace and menu bar

Chapter 2 Installation

2.1 Installation Procedures

AdvaBuild Display Builder is a factory installed option in your operator station. You need to have this option installed in your operator station to be able to run the Display Builder function. AdvaBuild Display Builder is included in the engineering station.

2.2 Product Verification

If you want to check that the Display Builder option is installed in your operator station do as follows:

1. Press the key <**System Config**> on the operator's keyboard (or select the **System Config** subitem in the pop-up menu **Operation**).

   The configuration dialog appears:

D1 AdvaCommand…	D2 AdvaBuild...	D3	D4	D5
D6 Settings...	D7 Station…	D8 Maintenance...	D9	D10

Figure 2-1. Dynamic function keys - Configuration dialog

   (If you have the authorization key in the position for **Max dialog** or if you have selected **Max dialog** in the pop-up menu **Operation.**)

2. Press the dynamic function key **<D2>** (**AdvaBuild...**) on the operator keyboard or press **F2** on a standard keyboard.

   The AdvaBuild dialog (for an operator station with AdvaCommand, but not for an operator station with AdvaCommand for Windows NT) appears:

D1 Display Builder	D2 Display Installer	D3 Display Transfer	D4	D5
D6 On-line Builder	D7 Text Edtitor	D8	D9	D10

Figure 2-2. D2 AdvaBuild…

   If the **D1** key now reads **Display Builder**, you have the Display Builder option installed.

   Consult the *Advant Station 500 Series Engineering Station User's Guide* on how to start Display Builder in the engineering station.

Chapter 3 Configuration/Application Building

3.1 Considerations

3.1.1 Preliminary Planning

You do not need an operator station to begin planning your displays. This manual and the *AdvaCommand User Interface Reference Manual* contain all the dynamic objects (display elements) you need to plan the displays on paper in advance.

3.1.2 Preliminary Layout

Include all objects, static as well as dynamic, and text in your display layout. You do not need advanced drawing skills to make preliminary sketches and to prepare a usable layout.

Use the following technique for your final version of a graphic display layout:

- Make graphic layout grid forms.
- Print the display title (if desired) on the layout.
- Draw the process diagram on the graphic layout grid. Represent each static graphic and display element in its correct position and its relative size. Use colors corresponding to the ones available in the Colors palette.
- Pencil in text items in the proper positions. Include zeros and decimal points to reserve space for the characters of values to be displayed.
- Note on an attached sheet of paper the background color for the overall background and any local background color for large graphics.

Display Builder has a menu-selected function that provides Helvetica, Times and Courier fonts in different styles and sizes.

3.1.3 Graphical Objects

Graphical objects can be both static and dynamic. When you build them in the workspace, you can rotate and mirror them. Note that you also can do the same when you are designing the layout. You can rotate a graphical object a full 360 degrees. Its shape will change slightly as it rotates because pixels on the screen are somewhat taller than they are wide. You can flip a mirrored graphical object 180 degrees side for side so that it faces the opposite direction.

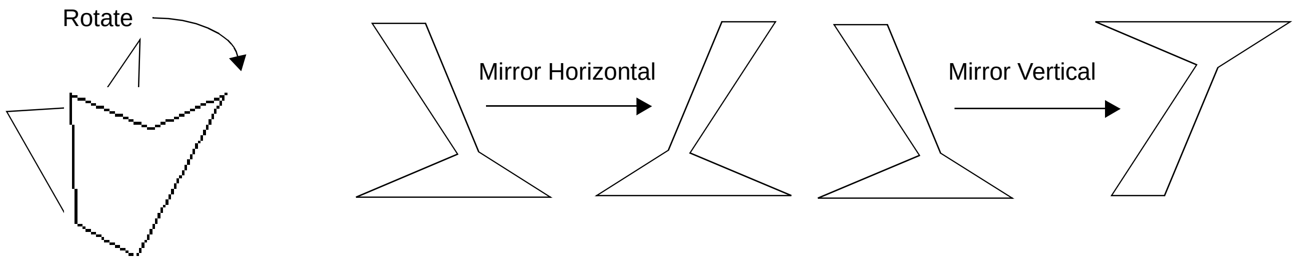


Figure 3-1. Rotated and mirrored objects

3.1.4 Guidelines for Display Design

Below follows some principles on how to design displays to make them easier to understand, read and use. For more infomration about designing display see for example *The Computer Display Designer's Handbook*.

- Use uniform color coding.
- Arrange symbols to show the flow of energy, material and data in a consistent manner, for example, left to right, top to bottom, etc.
- Differentiate equipment outlines and piping lines by color or width.
- Design process symbols to represent the process in the most effective way.
- Show only those symbols that are important to the operator's understanding of the process.
- Use numeric values and text to make the display more understandable and comprehensive.
- Place arrows judiciously in process lines to indicate the direction of the flow.

3.2 Tutorial

If you are a first-time user of Display Builder, this section of the manual is intended for you. The emphasis in this section is more procedural than descriptive. You will find a set of step-by-step instructions on how to build a basic display from beginning to end.

Since this section is a tutorial, not every feature of Display Builder is discussed. See Section 3.3 Display Builder Procedures for a closer examination of other features and functions not described in this section.

As an example, we will build the following display:

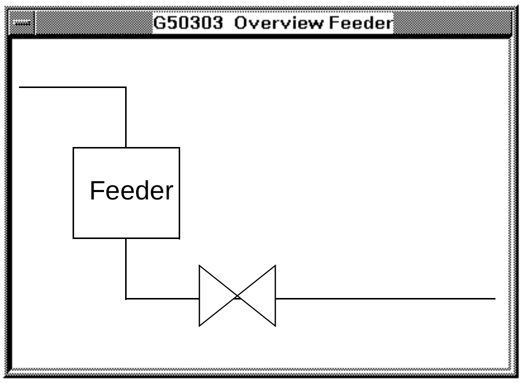


Figure 3-2. Demonstration sample of a user-built display

The display consists of static lines, static text and a static rectangle that represents the feeder. The display also contains a process object, that is a valve. The valve is connected to the process so you can control it with dialogs in runtime.

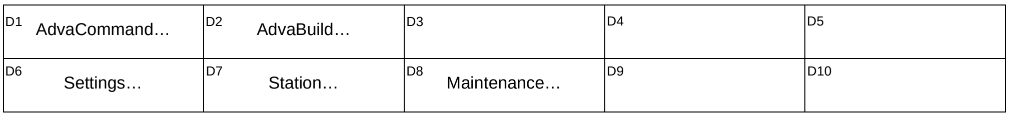
3.2.1 Starting Display Builder

Consult the *Advant Station 500 Series Engineering Station User's Guide* on how to start Display Builder in the Engineering Station.

To start Display Builder in the operator station:

1. Press the key **<System Config>** on the functional keyboard or select **System Config** under the item **System Display Keys** in the pop-up menu **Operation**.

   The following set of dynamic function keys is displayed at the bottom of the screen.



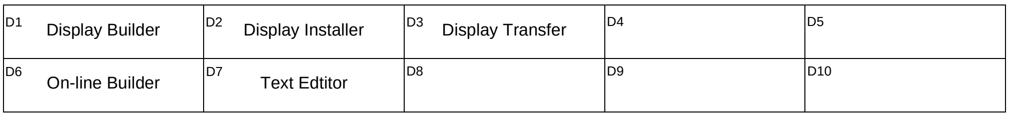
D1 AdvaCommand…	D2 AdvaBuild…	D3	D4	D5
D6 Settings…	D7 Station…	D8 Maintenance…	D9	D10

Figure 3-3. Dynamic function keys - System Configuration dialog

   (If you have the authorization key in the position for **Max dialog** or if you have selected **Max dialog** in the pop-up menu **Operation.**)

2. Press **<D2>** (AdvaBuild...) on the operator keyboard or press **F2** on a standard keyboard.

   A new set of dynamic function keys is displayed.



D1 Display Builder	D2 Display Installer	D3 Display Transfer	D4	D5
D6 On-line Builder	D7 Text Edtitor	D8	D9	D10

Figure 3-4. Dynamic function keys - AdvaBuild dialog

3. Press **<D1>** (Display Builder) on the operator keyboard or press **F1** on a standard keyboard.

   The main Display Builder box is displayed.

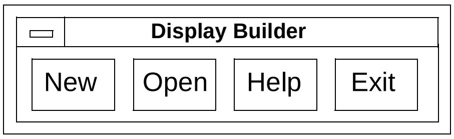


Figure 3-5. Main display builder box

NOTE

You can not select the Display Builder without the authorization key in the position for **Max dialog** (a yellow key is displayed at the top of the screen). Otherwise the dynamic function key for Display Builder is dimmed and you cannot start Display Builder.

3.2.2 Opening an Empty Workspace

To open an empty workspace:

1. Click on the **New** button.

   A dialog box with a list of templates is displayed:

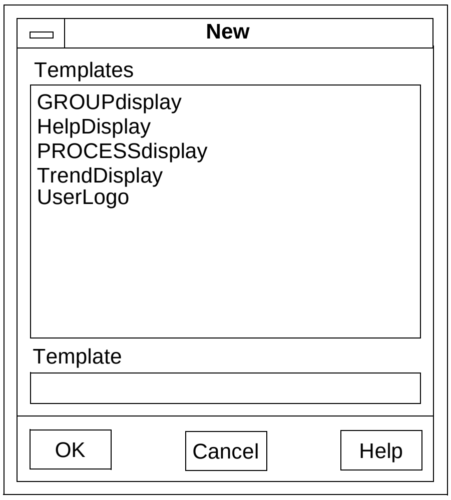


Figure 3-6. Template dialog box

2. Click on **PROCESSdisplay** to select the Process Display template.
3. Click on **OK**. If you double-click on the name, you do not have to click on **OK**.

   In a few seconds, an unnamed empty workspace, together with the **Colors** palette, **Graphics** box and **Display Element Palette**, is displayed on the screen.

3.2.3 Building a Display in the Workspace

You will build your display in the workspace, which is illustrated in the figure that follows..

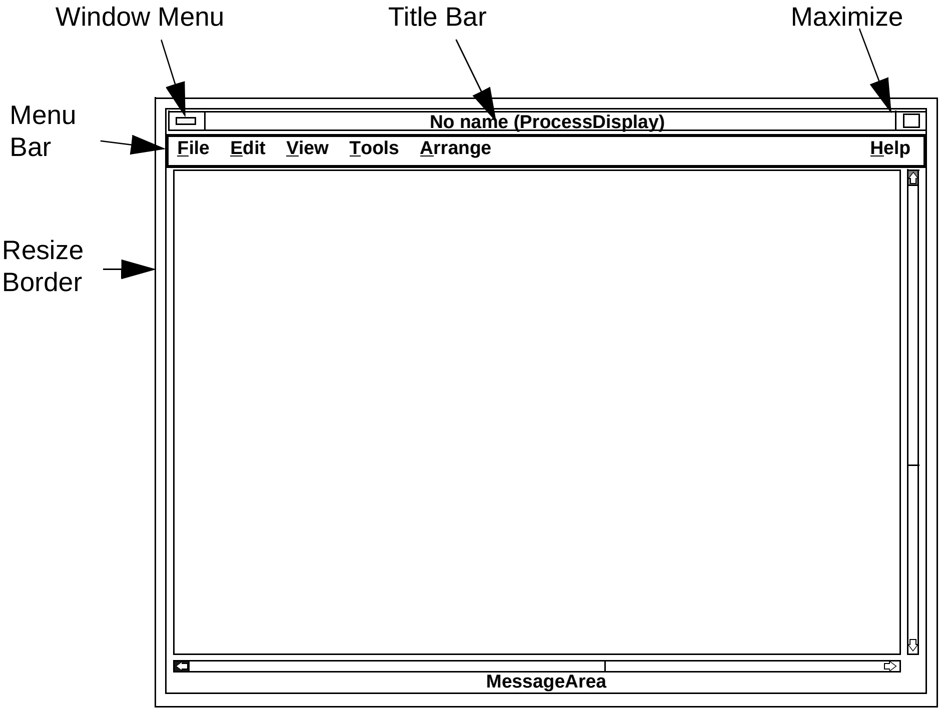


Figure 3-7. Empty workspace and its menu bar

A visible grid is displayed to help you when you are drawing. Turn the grid off as follows:

1. Press the mouse button on **View** in the menu bar. The items in the **View** menu are displayed.
2. Drag to **Grid**.
3. Release the mouse button.

   The grid disappears. Follow the same procedure to turn the grid on.

3.2.3.1 Inserting Display Elements

To insert display elements you can use object lists as described below to import ASCII files containing the object names. This is described in more detail in Section 3.3.2.1 Process Object List. If you do not use an object list, you must connect the object in the dialog box for Display Element Attribute Setting, see Section 3.2.3.2 Setting Attributes for a Display Element.

1. Choose **Object List** from the **Tools** menu.

   A dialog box with a list of the imported files containing process object names is displayed.

2. Choose a file containing the process objects which are to be included in the display.

   A dialog box with a list of process object names is displayed.

3. Click on a process object name for a process object of the type valvecon to select it.

   By means of the Display Element Palette you choose how you want to present the process object:

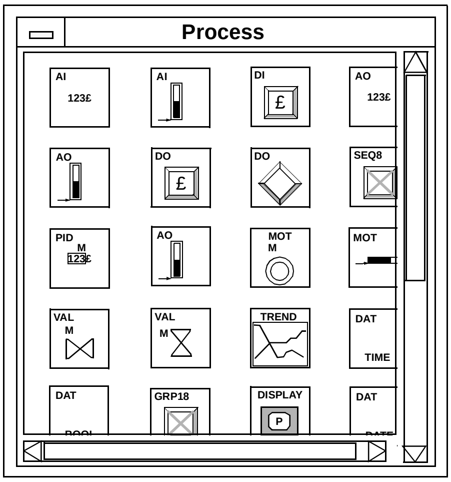
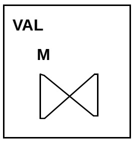


Figure 3-8. Display element palette

4. Select the display element in the palette by clicking on the valve display element. It is highlighted.



5. Click in the workspace where you want to position the valve. The valve symbol, in black color, is presented in the workspace.

Once you have placed the display element in the workspace, you can move it either by pressing the mouse button on the display element and then drag the object to a suitable position or by selecting the display element and move it with the Cursor Control keys on the keyboard.

You can also assign the display element specific characteristics (attributes) which govern its appearance. This is done in the dialog box for Display Element Attributes, see next section and Section 3.3.3 Setting Attributes for a Display Element.

3.2.3.2 Setting Attributes for a Display Element

NOTE

> If you have used the object list and want to use the display element's default setting, you do not have to go into the attributes box for the display element. The connection display element - process object is automatically made when you use the object list. Default setting are used in this example. The next steps, therefore, are only valid if you have no object list.

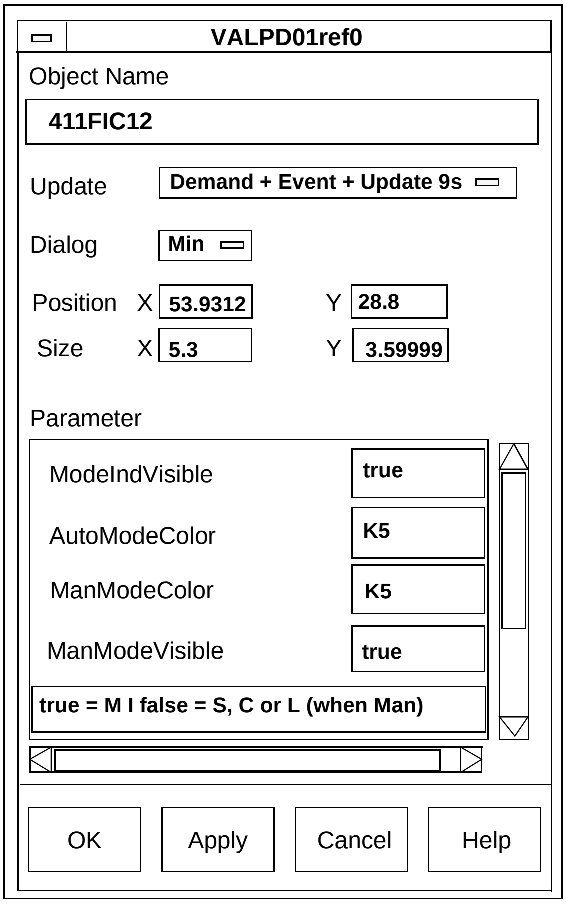
To set attributes for the display element:

1. Click on the valve in the workspace.

   It is highlighted.

2. Choose **Display Element Attributes** from the **Tools** menu.

   A box is displayed where you can set attributes for the valve.



VALPD01ref0

Object Name: 411FIC12

Update: Demand + Event + Update 9s

Dialog: Min

Position X 53.9312 Y 28.8

Size X 5.3 Y 3.59999

Parameter

ModeIndVisible: true

AutoModeColor: K5

ManModeColor: K5

ManModeVisible: true

true = M I false = S, C or L (when Man)

Figure 3-9. Display element attributes box

3. Enter the process object name, for example, **411FIC12**. It is important that the object is of the type that the display element is intended for. Use all the default values for the valve.
4. Click **OK** in the attributes box.
5. Click anywhere in the workspace to deselect the valve.

See Section 3.3.3 Setting Attributes for a Display Element for more information about Display Element Attributes.

3.2.3.3 Inserting Graphics

The **Graphics** box is displayed when you select the Process Display template.

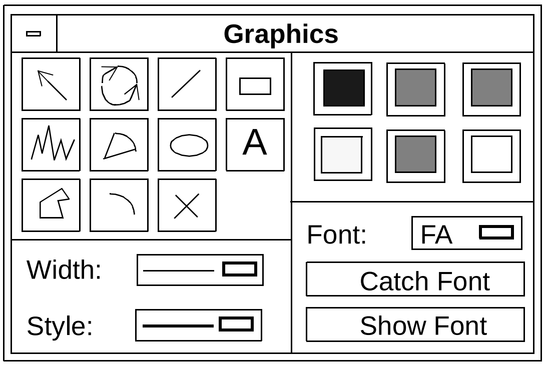
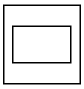


Figure 3-10. Graphics box

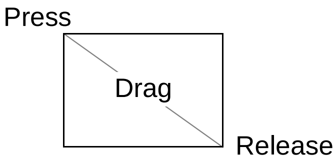
Draw a Rectangle

To draw the rectangle:

1. Click on the **Rectangle** tool in **Graphics** box**.**



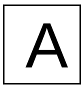
2. Position the pointer in the workspace where the upper left-hand corner of the rectangle is to be presented. Press the **select** mouse button, drag and release it where the opposite corner of the rectangle is to be.



Write a Text

To write the text "Feeder":

1. Click on the **Text** tool in the **Graphics** box. Use the default font.



2. Click in the workspace where you want the text to go.

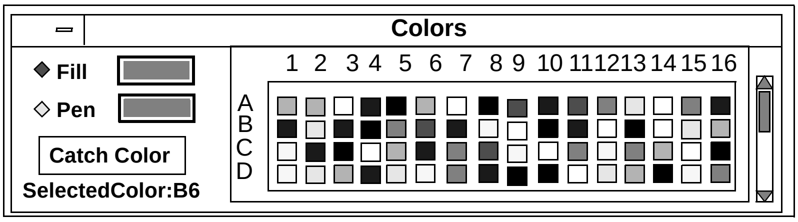
   The pointer arrow becomes an insertion point (**I**). Enter **Feeder**.

Draw Lines in Color

To draw the lines in color:

1. Double-click on the **Polyline** symbol in the **Graphics** box. (Double-clicking makes that tool active until you choose another tool.)

The **Colors** palette is displayed when you select the Process Display template:

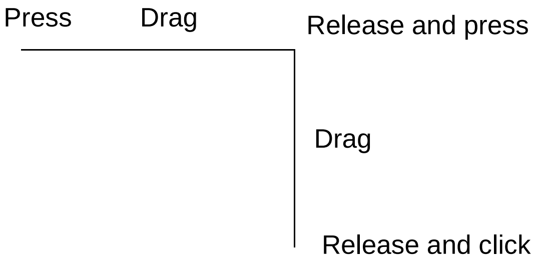


SelectedColor:B6

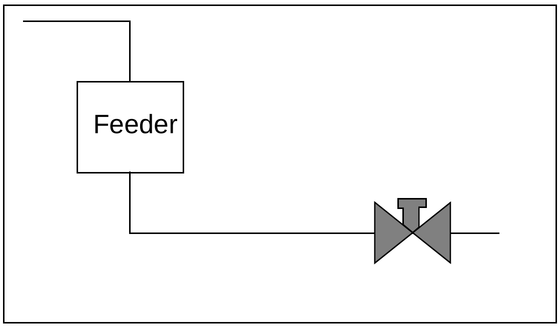
Figure 3-11. Colors palette

2. Click on **Pen** in the **Colors** palette. Select a color by clicking on it.

3. Press the <**Shift**> key, drag the line horizontally and release. Drag the vertical line and release. (The <**Shift**> key makes the line straight with no gradient.)



4. Draw the remaining lines in the same way.

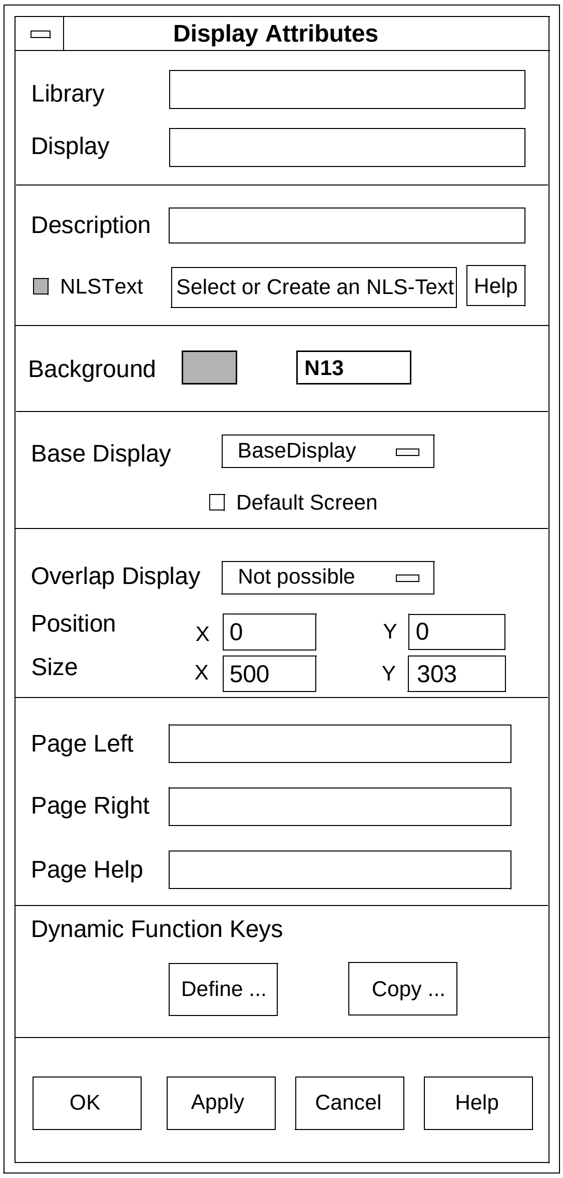


3.2.3.4 Setting Attributes for a Display

To set attributes for the display:

1. Choose **Display Attributes** from the **Tools** menu.

   The Display Attributes box is displayed. (It is not possible to write in the Library and Display field.)



Background N13

Base Display BaseDisplay

☐ Default Screen

Overlap Display Not possible

Position X 0 Y 0

Size X 500 Y 303

Figure 3-12. Display attributes box

2. Enter the description in the Description field, for example, **Overview Feeder**. Use the default values for the display.

Define Dynamic Keys for a Display

Dynamic function keys can be defined for the display. With the dynamic function keys, you can call up displays and start dialogs in runtime.

To define the dynamic function keys for the display:

1. Click on **Define** to define dynamic function keys connected to the display.

   A new dialog box is displayed.

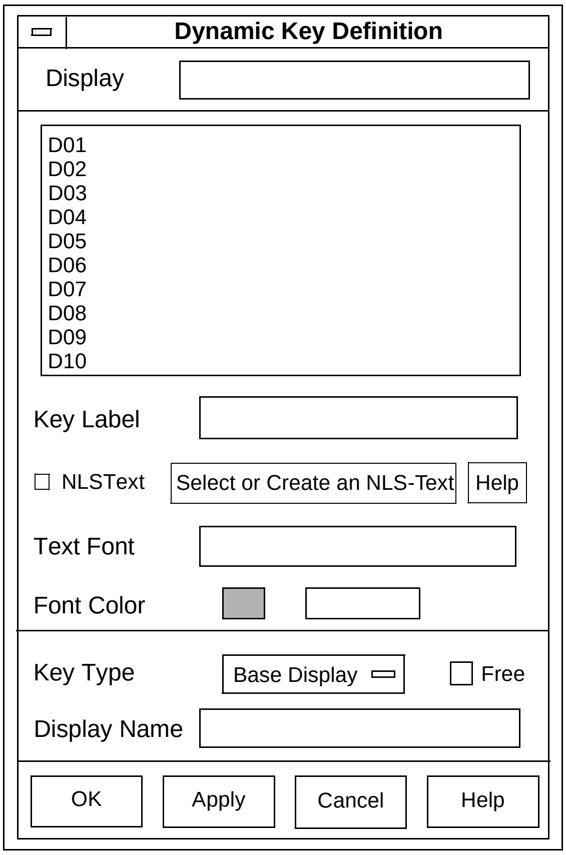


Figure 3-13. Dynamic key definition box

2. Click on one of the keys, for example, **D01**, in the list.
3. Enter the key label text in the Key Label field for the first key, for example, **Report Display.** Use the default values for text font, font color and key type.
4. Enter the display name in the Display Name field, for example, **R411PulpProduce**.
5. Click **Apply** followed by **OK** in the **Dynamic Key Definition** dialog box.
6. Click **OK** in the attribute box for the display.

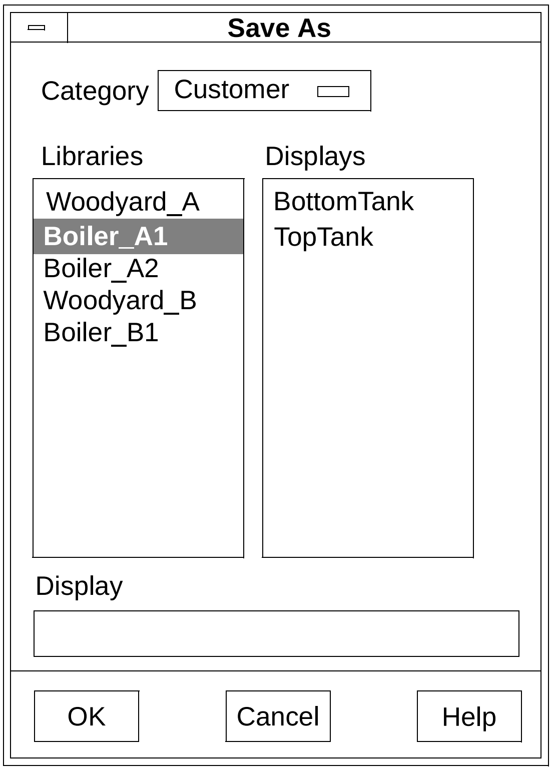
The configuration is now complete but the display has not been saved.

3.2.4 Saving a Display

To save the display:

1. Choose **Save As** from the **File** menu.

   A dialog box is displayed:



Category Customer

Figure 3-14. Save As dialog box

2. Select the library where you want to save the display and enter the display name in the name field, for example, **G50303**.
3. Click **OK.**

   The display is saved. It now has to be installed before it can be presented in runtime. How to install a display is described in the instruction book *AdvaCommand Basic Functions User's Guide* or *AdvaCommand for Windows NT Basic Functions User's Guide.*

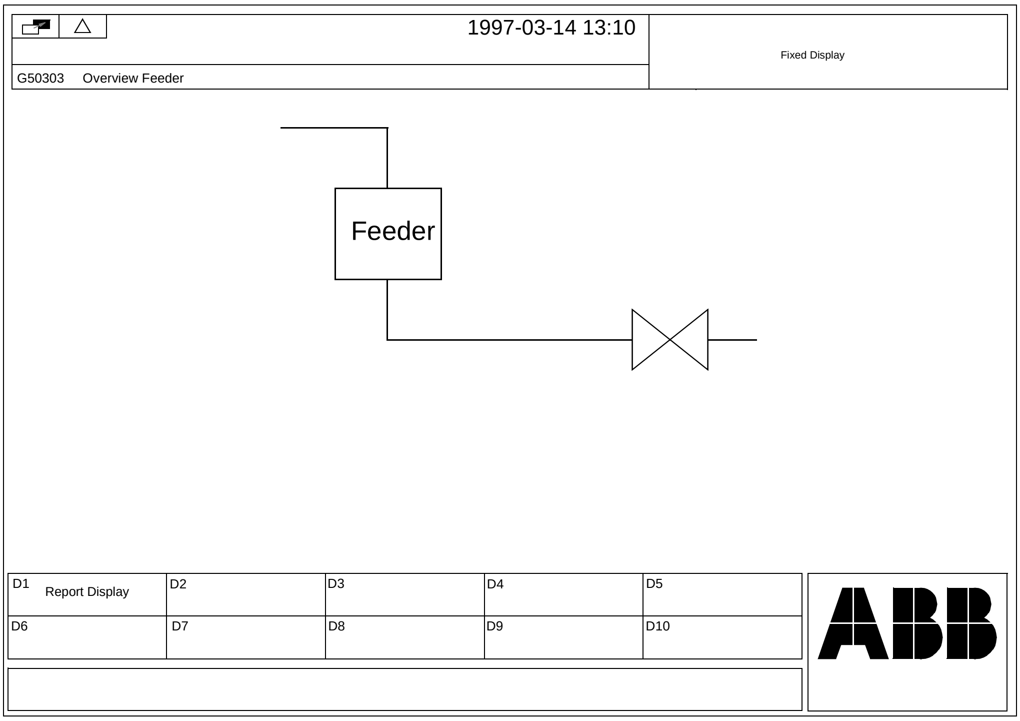


Figure 3-15. Display in runtime

3.2.5 Closing the Workspace

To close a workspace:

- Choose **Close** from the **File** menu.

If the display has been saved the workspace is removed, otherwise Display Builder asks you if you want to close the workspace anyway. The workspace is automatically closed when you exit Display Builder.

3.2.6 Exiting Display Builder

When you want to stop working with this tutorial and exit Display Builder you click on **Exit** in the main Display Builder box. If the display has been saved, Display Builder removes all its boxes and palettes, otherwise Display Builder asks you if you want to exit without saving the display.

3.3 Display Builder Procedures

The displays are comprised of static graphical information and dynamic objects, that is display elements. The process objects are controlled in runtime by means of the dialogs connected to the display elements in the displays.

A display shows, for example, an overview of a process, trend traces, a process section, an event list or detailed information about an object. You can zoom and pan in the display while building.

You can build a display following these steps:

1. Choose the type of display you want to build.

   You can choose from a list of ready-made templates. The templates are specially designed for process displays, group displays, help displays, or trend displays.

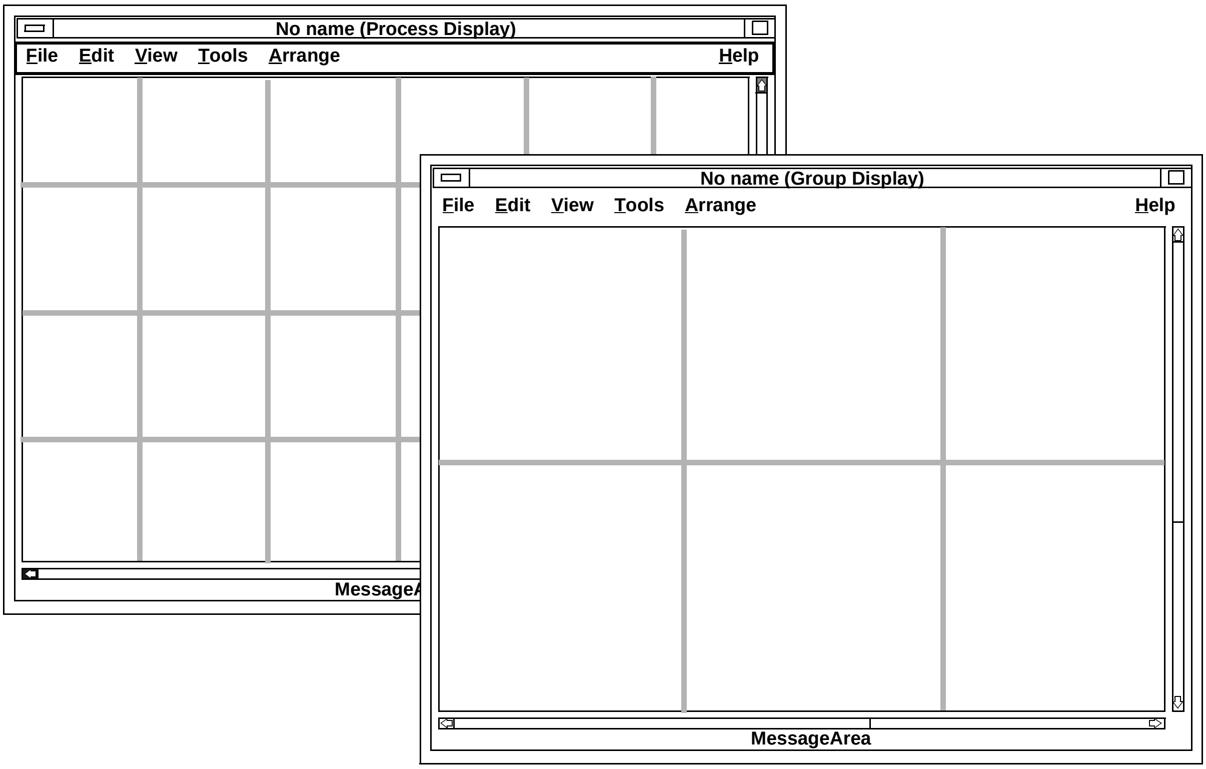

No name (Process Display)
File Edit View Tools Arrange Help
MessageA
No name (Group Display)
File Edit View Tools Arrange Help
MessageArea

Figure 3-16. Examples of templates

2. Choose how the process objects will appear using display elements.

   Display elements appear as icons in ready-made, or user-designed palettes.

3. Position the display element in the display.

   Click in the workspace immediately after you choose the display element in the palette.

4. Connect the process objects to the display elements.

   There are two ways of doing this.

   – One way to connect the process objects to the display elements is to call up a Display Element Attributes box, and enter the object name in the box.

   – The easiest and quickest way to connect the process objects to the display elements is to import ASCII files containing the object names. You select the objects by clicking with the **select** mouse button on the object name, then click on a display element in a palette and position it in the display.

NOTE

The process object and the display element must be of the same type to be able to display the value or values of the process object, that is an analog input signal can only be displayed by display elements specially made for AI object.

5. Set the display element attributes or use the default settings.

   All display elements have default settings for update, process dialog, color and size. These can easily be changed.

6. Input static information such as lines and graphics.

   In the Graphics box, you will find graphical tools as well as fill pattern, line appearance and text font. Choose color from the Colors palette, which contains 192 colors.

7. Set the display attributes.

   You can state background color, display type, linked displays and dynamic function keys attributes.

8. Save the display with a suitable name.

If you like, you can also start with the static information and add the dynamics later.

3.3.1 Starting Display Builder

3.3.1.1 Main Display Builder Box

Consult the *Advant Station 500 Series Engineering Station User's Guide* on how to start Display Builder in the engineering station.

In the operator station Display Builder is started from the System Configuration display**.**

1. Press the key <**System Config**> on the operator's keyboard or select **System Config** under the item **System Display Keys** in the pop-up menu **Operation**. The System Configuration dialog is displayed.

2. Click on the dynamic function key area named **D2 AdvaBuild** or press the corresponding dynamic function key on the keyboard.
3. Click on the dynamic function key area named **D1 Display Builder** or press the corresponding dynamic function key on the keyboard.

The main Display Builder box with the alternatives **New**, **Open**, **Help** and **Exit** is displayed.

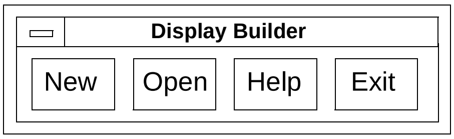


Figure 3-17. Main display builder box

The functions offered above enable you to perform the following operations:

New

Click on **New** to create a new display.

A dialog box with a list of templates is displayed:

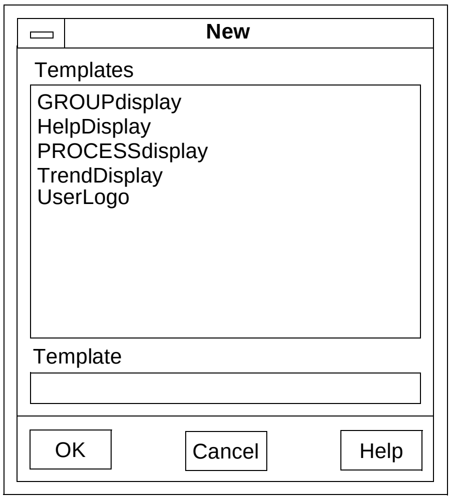


Figure 3-18. Template dialog box

Templates determine the size and the layout of the displays. They can cover a whole screen, or part of a screen.

The available templates are:

GROUPdisplay	A **Group Display** consists of 10 display fields. In each field, you can define a display element that shows the status of the process object in runtime.
HelpDisplay	You can link a **Help Display** to a process or group display. The help display contains help for the operator that is explanation how the main display works. The help display template is an overlap display. You can also define a process display as a help display.
PROCESSdisplay	You can design a **Process Display** with a large measure of freedom to meet different needs. You can create your own complete application-specific displays. The Colors palette, Display Element Palette and Graphics box are displayed along with the process display.
TrendDisplay	You can use a **Trend Display** to present TTD logs (from process stations) and History logs (from IMS stations) in the form of traces. You can configure the traces for the TTD and History logs both in the Display Builder, and in runtime in the Trend Display.
UserLogo	You can use a **User Logo** template to create a User Logo display that is displayed in the lower right hand corner on the operator station screen in runtime.

You can provide the process display, group display and trend display with dynamic function keys, which means that you can present other displays and start dialogs by using the dynamic function keys defined in the display.

Open

Click on **Open** to edit a display that has already been saved and closed.

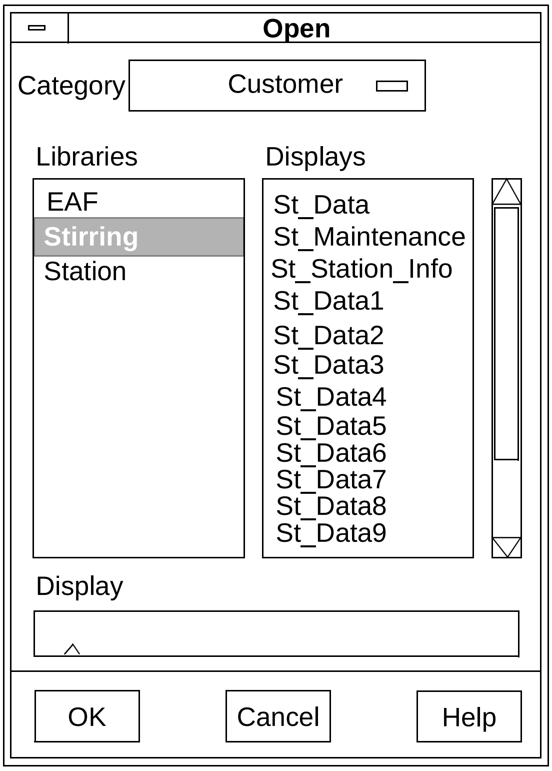


Figure 3-19. Open dialog box

The Open Dialog box is shown in Figure 3-19. A list of all the libraries and the displays in the selected library is displayed. Select a display by clicking on its name and click **OK**.

Category is a superior grouping of the displays and refers to the users, and the authority. System displays installed in the system before delivery are stored in libraries under the categories **Standard** and **Adaptions**. Examples of system displays are the Display Menu and the System Configuration display. The libraries under the categories Standard and Adaptions can not be changed by the user. In the **Customer** category you store your own defined displays.

Help

Click on **Help** to obtain information about Display Builder.

Exit

Click on **Exit** to exit Display Builder.

3.3.1.2 Workspace

The workspace where static objects and display elements are created and manipulated to build the display occupies most of the screen display. The workspace is illustrated in Figure 3-20. Its features are described below.

The display name appears in the **Title Bar** at the top of each display. This name is assigned when you save the display.

The **Menu Bar** consists of pull-down menus providing features and activities you require to configure the display. See Section 3.3.1.3 Menu Bar, for information.

Use the button located to the right of the Title Bar to **maximize** the workspace area. The size of the workspace's rectangular outline depends on the template you have chosen. Base displays occupy the entire width of the screen at runtime. Overlap displays can be stacked up in front of other displays at runtime. The size for overlap displays is specified when you set the display attributes as described in Section 3.3.5 Setting Display Attributes.

You can **resize** the workspace by selecting its border with the mouse button and dragging it to the desired size. This can also be done with the action **Size** in the workspace's **Window menu**.

To **move** the workspace, press and hold the mouse button anywhere on the Title Bar, drag the Title Bar to its desired position, and then release the button. This can also be done by with the action **Move** in the workspace's **Window menu**.

Close the workspace by double-clicking on the **Window menu button** with the mouse button or by choosing **Close** in the workspace's **Window menu**.

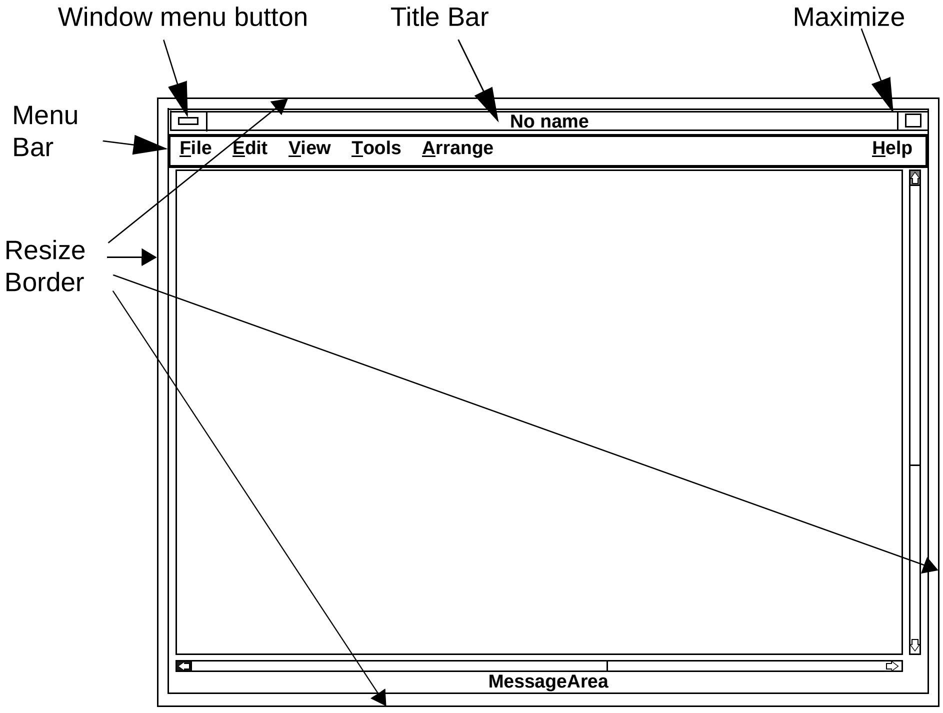


Figure 3-20. Empty workspace and menu bar

3.3.1.3 Menu Bar

The Menu Bar, shown below, is located in the upper portion of the workspace, just below the Title Bar.

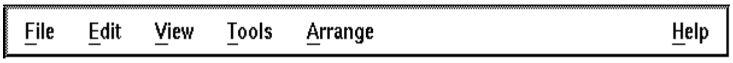


Figure 3-21. Menu bar

The Menu Bar consists of the following pull-down menus:

File

The **File** menu enables you to perform activities on a display such as creating, saving, opening, printing and deleting a display.

Edit

The **Edit** menu provides functions that enable you to modify the contents of the workspace such as copying and removing objects.

View

The **View** menu provides functions that enable you to change the way in which the display is viewed in the workspace such as zoom in.

Tools

The **Tools** menu enables you to perform activities required to connect the display to the process. It also provides functions you can use to select graphical objects and colors. From this menu palettes and boxes can be displayed such as the Graphics box, Object Lists etc.

Arrange

The **Arrange** menu enables you to perform activities to arrange the objects in the workspace such as to group objects together as one object, put an object in front of the other objects, mirror, align and distribute.

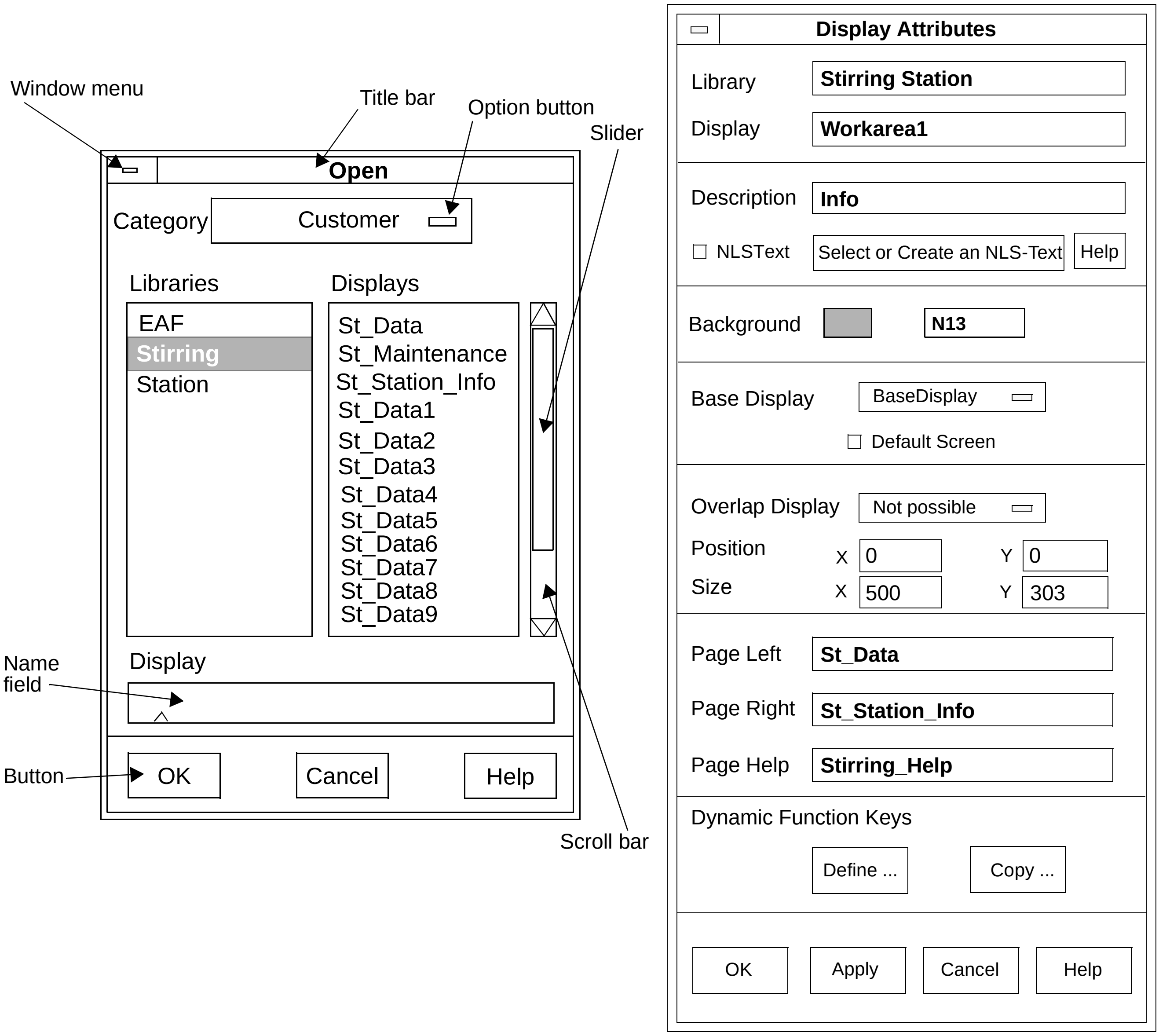
Help

The **Help** menu provides information about Display Builder to assist you.

Each of the pull-down menus listed above includes a number of specific functions or activities. See Section 3.5 Menu Bar Reference, for a detailed description of these functions.

3.3.1.4 Dialog Boxes

Dialog boxes present information to the user and accept user input.



Open

Category: Customer

Libraries: EAF, Stirring, Station

Displays: St_Data, St_Maintenance, St_Station_Info, St_Data1, St_Data2, St_Data3, St_Data4, St_Data5, St_Data6, St_Data7, St_Data8, St_Data9

Display:

Display Attributes

Library: Stirring Station

Display: Workarea1

Description: Info

☐ NLSText: Select or Create an NLS-Text | Help

Background: N13

Base Display: BaseDisplay

☐ Default Screen

Overlap Display: Not possible

Position: X 0, Y 0

Size: X 500, Y 303

Page Left: St_Data

Page Right: St_Station_Info

Page Help: Stirring_Help

Dynamic Function Keys

Figure 3-22. Examples of dialog boxes

Dialog boxes can have a list from which you can select items, for example, libraries, displays or templates. Using a **scroll bar**, you can scroll the visible area to view the entire list. A **slider** in the scroll bar indicates the relative position of the visible area. Generally, every dialog box also has a **name field**. If you click on a name in the (scrolled) list, the name is displayed in the name field. You can also enter a new name in the name field.

The dialog boxes can also have **option menus**. You can select from a set of choices with option menus. Pop up the option menu by pressing the mouse button on the **option button** located to the right of the menu label dialog, for example, to the right of the **Category** label in the figure above. Drag to the desired alternative and release the mouse button. You can also select the **option button** to display the menu and then select the desired alternative or click anywhere on the screen to remove the menu. Dialog boxes also contain buttons used to activate an operation. The label on a button indicates the action. The following actions are generally offered in the dialog boxes:

- **OK**

  Apply any changes made in the dialog box and cancel the dialog box.

- **Apply**

  Apply any changes made in the dialog box. The dialog box remains.

- **Cancel**

  Cancel the dialog box without performing any actions.

- **Help**

  Provide information about the dialog box and its functions.

All dialog boxes have a default action, which is indicated by an extra frame around the alternative. If you choose the default values, you only have to press the **<Return>** key.

The input fields and the buttons belonging to each other are organized in **tab groups**. Within the tab group, you navigate using the arrow keys on the keyboard. To enter a new tab group, use the **Tab** key on the keyboard. A tab group could, for example, be comprised of the **OK**, **Apply**, **Cancel** and **Help** buttons. This is not relevant when you use the mouse or trackball.

Each dialog box has a **Window menu button** located in its upper left-hand corner. To move the dialog box to a new location on the screen, you can either select **Move** from the menu or you can press a mouse button on the title bar and drag to the desired place. If you double-click on the button or choose **Close** in the **Window menu**, you close the dialog box without performing any actions (**Cancel**).

3.3.2 Inserting Display Elements in the Workspace

In addition to static graphical objects, the display is also built with dynamic objects called **display elements**. Display elements represent, for example, pumps, motors, valves, and signals such as analog and digital inputs. They present all changes in the process, that is status, speed, pressure, etc. In addition to representing process objects, a display element can also be a list, a curve, a display link, or it can present data from a database. Display elements can be texts, numerical values, text depending on a numerical value, etc.

Ready-made display elements are available in libraries or you can design your own display elements. The ready made display elements are described in *AdvaCommand User Interface Reference Manual*.

You can specify the appearance, dialogs and update facilities for each display element.

Do not position display elements so close in the workspace that the select areas of the display elements overlap each other because it may cause unwanted selection of the object in runtime. The select area includes not only the display element, but also a surrounding rectangle visualized by blue corners when the pointer is positioned within the select area in runtime. To select a display element in runtime, click within the select area. A white rectangle indicates that the process object that is presented by this display element now is selected and the dialog specified in the display element is displayed and active.

Display elements are selected in the same way as graphical objects, see Section 3.3.4.2 Selecting Graphical Objects. All display elements can be moved within the workspace but it is defined for each display element whether it is possible to resize it or not, see Section 3.3.4.3 Moving and Resizing a Graphical Object for information about how to move and resize graphical objects (and display elements). The possibility to rotate display elements is also defined for each display element, see Section 3.3.4.4 Rotating a Graphical Object for information about how to rotate graphical objects (and display elements).

The **display link** is a special type of display element. During runtime it is used to call up another display or start a dialog. No white rectangle appears when a display link is selected.

3.3.2.1 Process Object List

Process objects must be connected to the display elements in the display. One way of doing this is to import ASCII files which contain the object names. The ASCII files must have the extension ".ot", and put into the directory /products/data/customer/OS/lists.

You can have an object list for just one process display or you can have an object list for a whole process section. Choose **Object List** from the **Tools** menu to call up a dialog box with the available object lists.

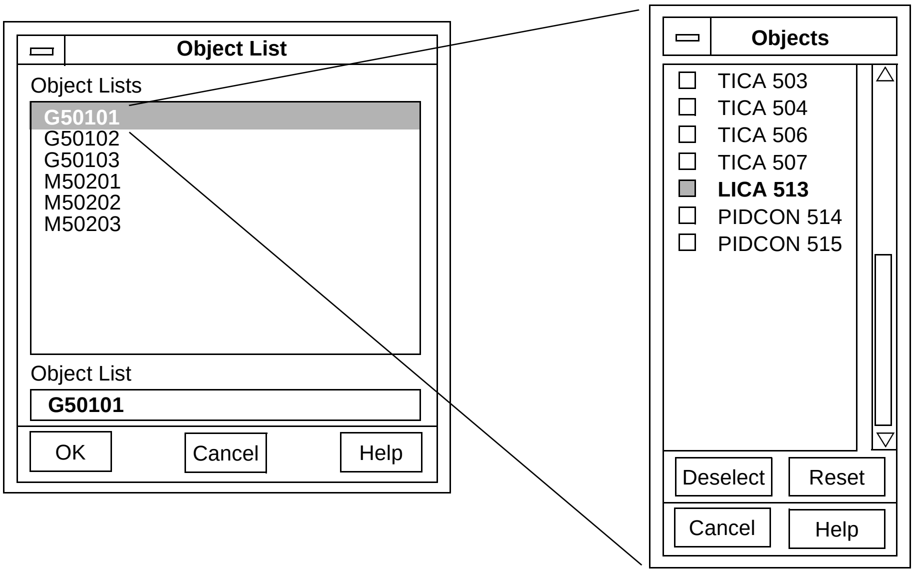


Figure 3-23. Object List dialog box and a selected object list

When an object list has been selected, click **OK** and the Object List dialog box is replaced by the object list itself.

Click on the object you want to connect to a display element, then click on the display element in the display element palette (see next section) and finally click in the workspace where the display element is to be presented. The connection, process object - display element, is done automatically. Built-in markers close to the names in the object list indicate which objects are already used, which helps you remember to include all objects.

3.3.2.2 Display Element Palette

Display elements are stored in libraries and are presented in palettes. A list of all available palettes is displayed when you choose **Display Element Palette** from the **Tools** menu. For example, one palette contains display elements suitable for process displays and another palette contains display elements for group displays.

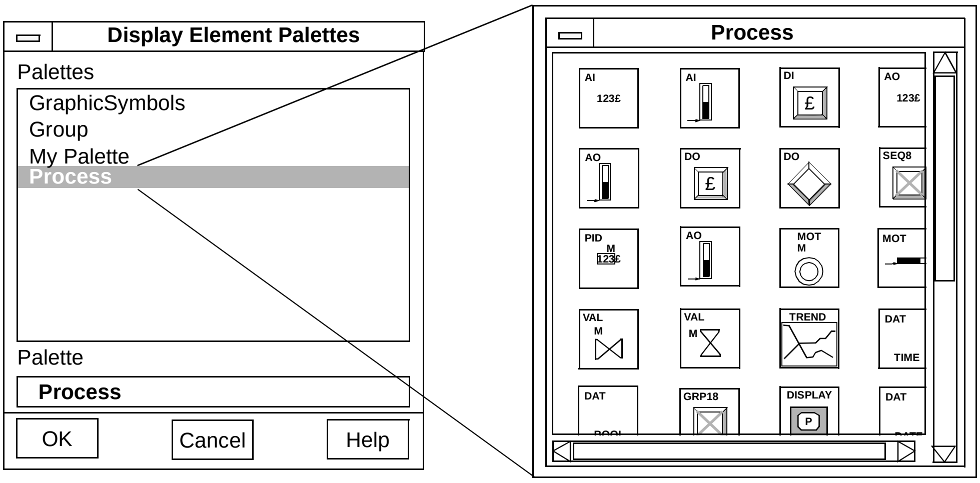


Figure 3-24. List of palettes and a selected palette with display elements

To position a display element:

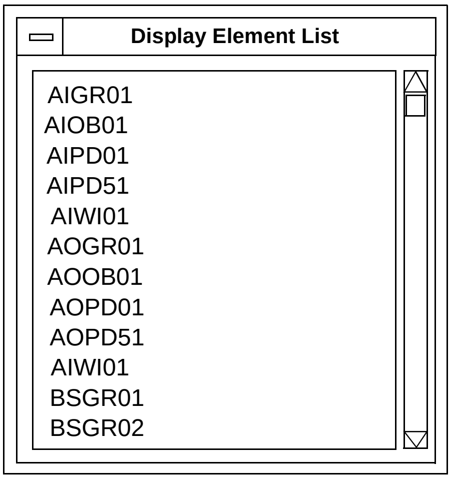
1. Select the palette that includes the display element and click **OK**. The box with all available display element palettes is replaced by the selected display element palette.
2. Click on the desired display element in the palette. The display element is highlighted in the palette.
3. Click in the workspace where you want to position the display element. The display element appears in black in the workspace.

You can set presentation attributes, dialogs and updating time immediately after you place a display element in the workspace by double clicking on the display element or by choosing **Display Element Attributes** from the **Tools** menu. See Section 3.2.3.2 Setting Attributes for a Display Element for further information.

The contents of the palette remains until you choose another palette. At that time, the contents changes to that of the newly selected palette.

3.3.2.3 Display Element List

You can get all available display elements listed in alphabetical order by choosing **Display Element List** from the **Tools** menu. Click on the desired display element in the display element list and position it in the workspace as described above.



Display Element List

AIGR01
AIOB01
AIPD01
AIPD51
AIWI01
AOGR01
AOOB01
AOPD01
AOPD51
AIWI01
BSGR01
BSGR02

Figure 3-25. Display Element List

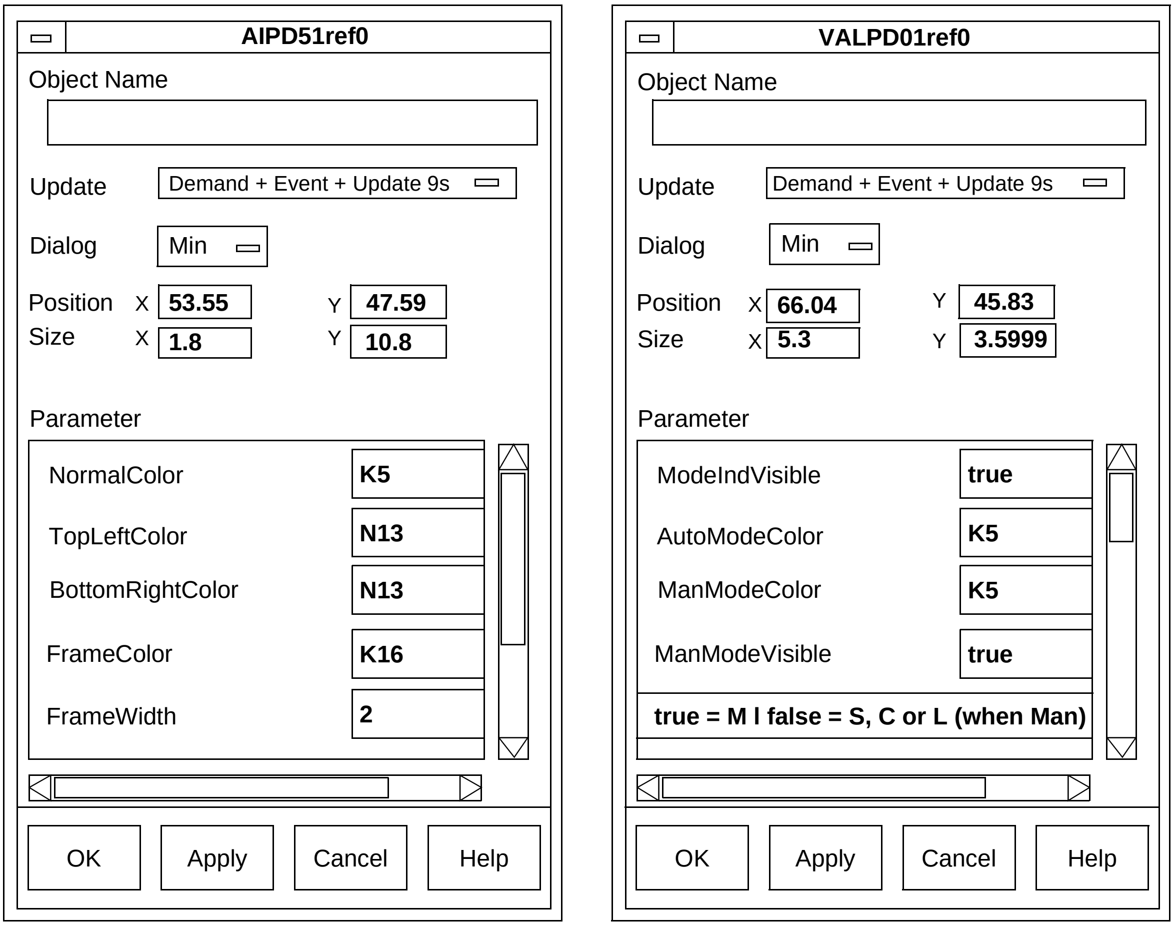
3.3.3 Setting Attributes for a Display Element

When a display element is placed in the workspace, you can specify attributes for its presentation and dialog. The modifications are only valid for the selected display element in that specific display. The display elements in the libraries cannot be changed by the Display Builder.

To display the Attributes box for a display element you do either of the following:

1. Double-click on the display element,
2. Select the display element and choose **Display Element Attributes** from the **Tools** menu.

It is possible to display several Attributes boxes at the same time by selecting several display elements and choose **Display Element Attributes** from the **Tools** menu.



AIPD51ref0

Object Name:

Update: Demand + Event + Update 9s

Dialog: Min

Position X 53.55 Y 47.59

Size X 1.8 Y 10.8

Parameter

NormalColor	K5
TopLeftColor	N13
BottomRightColor	N13
FrameColor	K16
FrameWidth	2

VALPD01ref0

Object Name:

Update: Demand + Event + Update 9s

Dialog: Min

Position X 66.04 Y 45.83

Size X 5.3 Y 3.5999

Parameter

ModeIndVisible	true
AutoModeColor	K5
ManModeColor	K5
ManModeVisible	true

true = M l false = S, C or L (when Man)

Figure 3-26. Attributes boxes for an AI (Analog Input Signal) and a PIDCON

The contents of the Attributes box depends on the selected display element. Fields for object name, update times, process dialog, position and size are common for most display elements. The configured parameters, for example, **NormalColor**, **LimitColor** and **ModeIndVisible**, depend on the object type. If an Attributes box contains more items than can be seen in the box, a scrollbar enables you to see all items.

Descriptions of the fields in the display elements Attributes box follow:

Object Name

Enter the name of the object that is to be controlled by the display element. If you have used an object list to insert the display element, the name is filled in automatically.

Update

Display elements have a default **updating time** (depending on the template) that is displayed in the Attributes box. You can change the updating time by pressing the mouse button on the updating field. An option menu with predefined alternatives is displayed. Release the mouse button on the desired alternative. The following alternatives are available:

- Demand
- Demand + Event
- Demand + Event + Update 9 seconds (Default for process displays)
- Demand + Event + Update 3 seconds
- Demand + Event + Update 1 second

Dialog

Different process objects can use different **dialogs**. The process object's dialog is activated when the process object (displayed by a display element) is selected in runtime. You can change the dialog that will be used to operate on the process object by pressing the mouse button on the dialog field. An option menu with the predefined alternatives is displayed. Release the mouse button in the desired alternative.

The following alternatives are available:

- Min
- Max
- None
- User

The standard process dialogs have two levels, **Min** and **Max** dialog. **Min** is the default dialog. With the **Min** dialog, an operator can execute the commands that are necessary during normal operation. The **Max** dialog offers further control possibilities such as changing limit values, blocking alarm handling, etc. You control the dialog level with the authorization key in the operator's keyboard. If the keyboard is open for Max dialogs, a yellow key symbol is displayed in the upper portion of the screen in run-time. If you always want the max dialog for the process object you choose Max.

If no dialog at all shall be available for this process object you choose **None**.

If you want to use an own written dialog for this process object you choose **User**. An input field is then displayed next to the option menu and the name of the dialog should be entered.

Position

X and Y coordinates for the display element's position in the display are indicated in this field, and can be changed if you click in the field, deleting the old values and entering new ones. The zero reference point is the lower left-hand corner of the workspace. Dragging a display element to a new position automatically updates the X and Y coordinates, and these become the new values.

Size

When you position the display element in the workspace, the display element is displayed in the default size. The default size, width and height, can be modified. Click in the field, delete the value and enter a new one. The size of some display elements can also be changed by dragging directly in the workspace.

Parameters

The graphic attributes of the display element, for example axis color, bar graph width and unit font, are displayed. All attributes have a default value. You can modify a value by entering the desired value in the text field.

3.3.4 Inserting Graphics in the Workspace

Graphical objects, for example, circles, rectangles, texts and lines, are static information and represent non-dynamic objects in the process. In addition to graphical objects, you also have display elements, for example, pumps, motors and valves. These are dynamics and can be controlled by the operator.

Display-building is based on the principle **WYSIWYG** (**What You See Is What You Get**). It means that everything you see when you are drawing will look the same in runtime.

The actions required to draw a display are available to you in the **Tools** menu. The **Graphics** box is divided into four segments: Tools, Pattern, Line and Text. You can choose drawing tools, such as an arc, a line, a rectangle, etc. Choose the colors from the **Colors** palette.

GraphicSetting combines features of **Colors** and **Graphics**. Attributes such as line width, line type, color, pattern and font, which will be used for a special purpose (for example, symbolizing water, oil, main flow, secondary flow, etc.) can be predefined, given a name and put into a list called **GraphicSetting**. This increases the display design's efficiency and gives the displays a more uniform appearance. See Section 3.5.4.3 GraphicSetting, for further information.

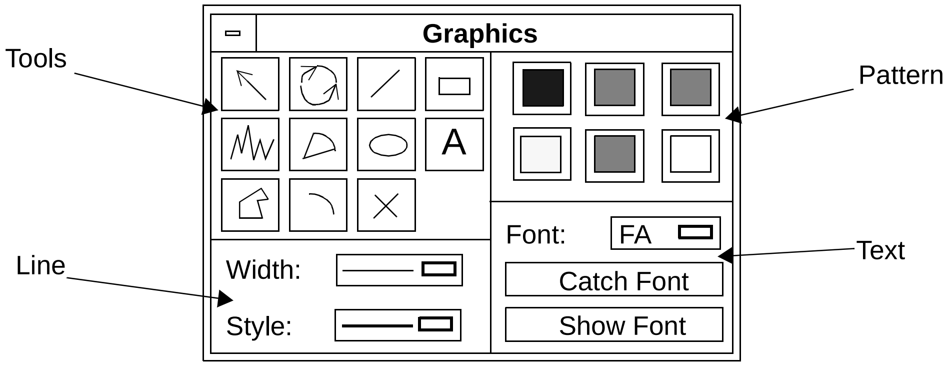


Figure 3-27. Graphics box

3.3.4.1 Creating a Graphical Object

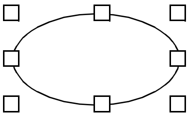
Graphical objects are created with the graphical tools in the **Graphics** box. The graphical tools are Line, Rectangle, PolyLine, Pie, Ellipse, Text, Polygon, Arc, and Point. See Section 3.5.4.1 Graphics for more information. The object you insert in the workspace will have the attributes you choose in the **Graphics** box as well as the colors you have selected in the **Colors** palette. Any selected object in the workspace receive the chosen attribute when you change attribute and color.

1. Click on the graphic symbol in the Graphics box to select a tool.

   The symbol is highlighted in the box. If you double-click, the graphic tool you choose is active until you click on another tool. If you single-click, the graphic tool you choose is active only once, then the default tool becomes active. The default tool is the select tool, the arrow, that also is used for moving and resizing objects.

2. Position the pointer in the workspace where you want the object presented.
3. Depending on the graphic object you want to create, press, drag and release the **select** mouse button.

   Small rectangles are displayed on the border of the object indicating that the object is selected. These rectangles are the handles you use, for example, to resize the object.

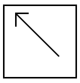


3.3.4.2 Selecting Graphical Objects

Display elements and graphical objects that have been inserted in the workspace are selected in the same way.

To select an object you have to use the **Select** tool, the arrow.

Click on the **Select** tool in the Graphics box if not already selected. The **Select** tool is the default tool.



Select One Graphical Object

1. Point on the object you want to select.
2. Click with the **select** mouse button.

Handles are displayed around the object.

Select More Than One Graphical Object

1. Point on the first object. Click the **select** mouse button.
2. Point on the second object. Keep the <**Shift**> key pressed down while you click with the **select** mouse button.
3. Repeat until you have selected all the object you desire.

Handles are displayed around each object.

Select Graphical Objects as a Group

1. Press the mouse button outside the objects and drag until the select rectangle covers all the objects desired. When you select objects as a group, a select rectangle appears around the objects.
2. Release the mouse button.

Deselect One Graphical Object

1. Point on the object.
2. Press the **<CTRL>** key and click with the **select** mouse button.

This is useful when you have selected graphical objects as a group and want to deselect only one of them.

Deselect All Objects

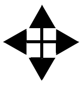
Click somewhere outside the objects (not on an object).

3.3.4.3 Moving and Resizing a Graphical Object

To move or resize an object you have to use the **Select** tool, the arrow.

Move An Object

The object don't need to be selected to be able to move it. If the pointer is anywhere on an object, it changes to the following shape, which means that you can move the object:



1. Position the pointer on the object so you get the shape for move.
2. Press the **select** mouse button.
3. Move by dragging to the desired position.

NOTE

> If you want to move a group of objects, you must first select them as described in the section above.

If you press the **Shift** key during move, the object moves horizontally or vertically.

You can also move selected objects by means of the cursor control keys on the keyboard. Use the **Select** tool to select one or several objects. Now when the cursor control keys are used the selected object or objects will move one pixel in the direction for the cursor control key.

Resize an Object

To resize an object the object must first be selected. The shape of the pointer depends on its position. If the pointer is on a handle, it changes to one of the following alternatives, which means that you can resize the object:

⇤	Increase Left
⇥	Increase Right
⤓	Increase Bottom
⤒	Increase Top
⇱	Increase at Upper Left Corner
↙	Increase at Lower Left Corner
⇲	Increase at Lower Right Corner
↗	Increase at Upper Right Corner

1. Select the object.
2. Position the pointer on one of the objects handles so you get the desired shape for resize.
3. Press the select mouse button.

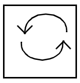
4. Resize by dragging to the desired size.

If you press the **Shift** key during resize, the increase/decrease is proportional.

3.3.4.4 Rotating a Graphical Object

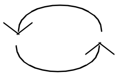
To rotate a graphical object you start with the **Select** tool, the arrow.

1. Select the object that you wish to rotate.
2. Click on the **Rotation** tool in the Graphics box.



3. Position the pointer on a corner handle of the object.

   The pointer changes to:



4. Rotate the object by dragging to the desired angle and release.

The object is rotated around its definition point. Default is the center of the object. To learn how to change the definition point, see Section 3.5.2.7 Definition Point.

An object can also be rotated by using the **Rotate** function in the **Arrange** menu. See Section 3.5.5.3 Rotate.

NOTE

The text objects cannot be rotated.

3.3.4.5 Fill Pattern

To modify the **fill pattern** of a graphical object you use the **Select** tool, the arrow.

1. Select the object to be filled.
2. Click on the desired fill pattern in the Graphics box. There are six choices where one choice is transparent, that is no fill pattern (and fill color) at all.

The pattern remains selected until another pattern is selected.

3.3.4.6 Text

Write a Text Object

To write a text object you use the **Text** tool.

1. Click on the **Text** tool in the Graphics box. The shape of the pointer becomes an I - beam (`I`).

A

2. Click where the text is to be presented.
3. Choose desired **Font** and **Color**.
4. Enter the text.

If you want to modify text that is already written, you must activate the **Text** tool before you can make any changes.

A Display Builder **Font** include both **font**, **style** and **size**. **Font** is Helvetica, Times or Courier. **Style** defines how the text is to be presented, that is in boldface or mediumface and upright or slanted. **Size**, that is 10, 20, 30, 40, 50 and 60, does **not** correspond to the fonts height in pixels. In Display Builder short logical font names are used. The font names are put together of both font and size, for example, FA30.

Available Font Styles

The following font styles are available:

- FA helvetica-medium-r-normal (helvetica-medium-r-normal)
- FB helvetica-medium-o-normal (*helvetica-medium-o-normal*)
- FC helvetica-bold-r-normal (**helvetica-bold-r-normal**)
- FD helvetica-bold-o-normal (***helvetica-bold-o-normal***)
- FE times-medium-r-normal (times-medium-r-normal)
- FF times-medium-i-normal (*times-medium-i-normal*)
- FG times-bold-r-normal (**times-bold-r-normal**)
- FH times-bold-i-normal (***times-bold-i-normal***)
- FK courier-medium-r-normal (`courier-medium-r-normal`)
- FL courier-medium-o-normal (*courier-medium-o-normal*)
- FM courier-bold-r-normal (**`courier-bold-r-normal`**)
- FN courier-bold-o-normal (**`courier-bold-o-normal`**)

Select a Font

To select a font press the **select** mouse button on the Font field in the Graphics box to view a list of font names. The available type sizes appear in cascade menus corresponding to each font name. Release the mouse button on desired font and size.

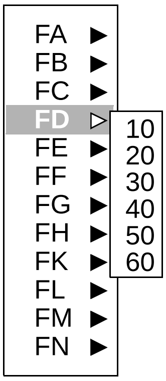


Figure 3-28. Font menu in the graphics box

Select a Color

To select a **Color** click on the Pen button in the Colors Palette. Choose a color in the palette.

Catch a Font

You can pick up an already used font from the workspace. Click on the **Catch Font** button in the Graphics box. The pointer turns into a hand. Click on a text object in the workspace to set the object's font in the font menu.

Show a Font

Click on the **Show Font** button in the Graphics box to display a sample of the font you have chosen.

3.3.4.7 Line Appearance

Width and **Style** are the attributes that can be set for a line. The line attributes are valid for the following graphical tools: Line, Rectangle, Polyline, Pie, Ellipse, Polygon and Arc. When a line attribute is chosen it affects the selected graphical object or objects, if any, and it is valid henceforth.

Choose Line Width

1. Press the **select** mouse button on the line width field. A list of available widths is displayed. Default is the narrowest line.
2. Release the mouse button on the desired width.

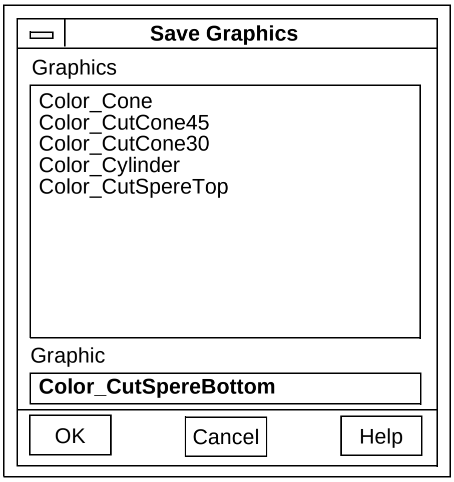
Choose Line Style

1. Press the **select** mouse button on the line style field. A list of available styles is displayed, for example, solid, dotted and transparent. Default is a solid line.
2. Release the button on the desired style.

3.3.4.8 Composite Graphics

You can easily save any graphics that you want to reuse in other displays later. By using composite graphics, the displays that have used the composite graphics will not be affected when the saved composite graphics is changed. If you want your display to be changed when the subpart are changed, you can accomplish this by using static display elements as described in next section.

Select the graphics in the workspace that you want to save as a composite graphic. Choose **Save Graphics** from the **Tools** menu. A dialog box is displayed where you can enter the name of the graphics you wish to save and click **OK**.



Color_Cone
Color_CutCone45
Color_CutCone30
Color_Cylinder
Color_CutSpereTop

Graphic: **Color_CutSpereBottom**

Figure 3-29. Save Graphics dialog box

When you want to use the saved composite graphic, choose **Get Graphics** from the **Tools** menu. A dialog box is displayed where you click on the desired name and then click **OK**. The graphics is positioned in the middle of the workspace.

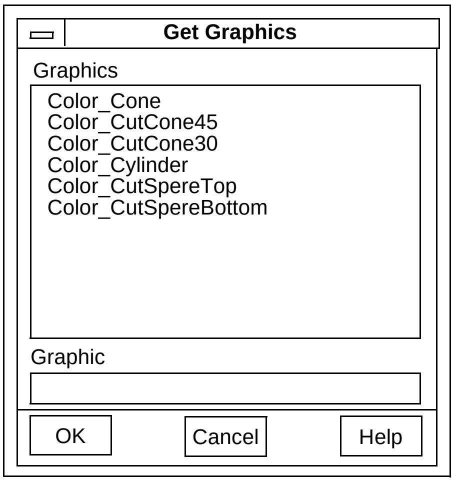
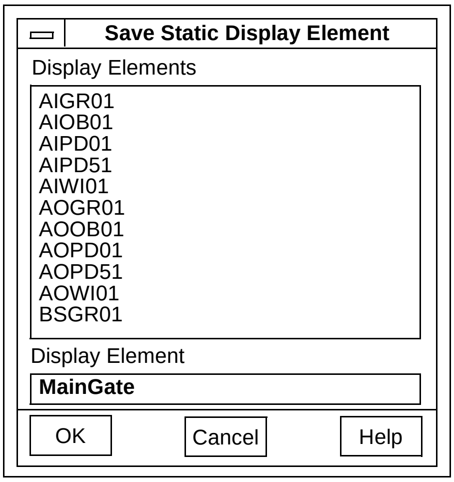


Figure 3-30. Get Graphics dialog box

3.3.4.9 Static Display Elements

Static graphics can be saved as static display elements, that is a display element which not have any dynamic behavior. The static display element can be used in other displays. If the static display element is changed, the display where the static display element has been used will be affected.

Select the graphics in the workspace that you want to save. Choose **Save Static Display Element** from the **Tools** menu. A dialog box is displayed where you can enter the name of the display element you wish to save and click **OK**.



Display Element: **MainGate**

Figure 3-31. Save Static Display Element dialog box

When you want to use the saved graphics, choose **Display Element List** from the **Tools** menu. The display element list is displayed where you click on the desired name and then click in the workspace where you want to position the display element.

As a convenience, there is a set of ready-made useful 3-dimensional static display elements. Choose **Display Element Palettes** from the **Tools** menu. Select the palette **GraphicSymbols** and click **OK**. The palette is displayed. Click on the desired name and then click in the workspace where you want to position the display element.

Examples of available geometrics are:

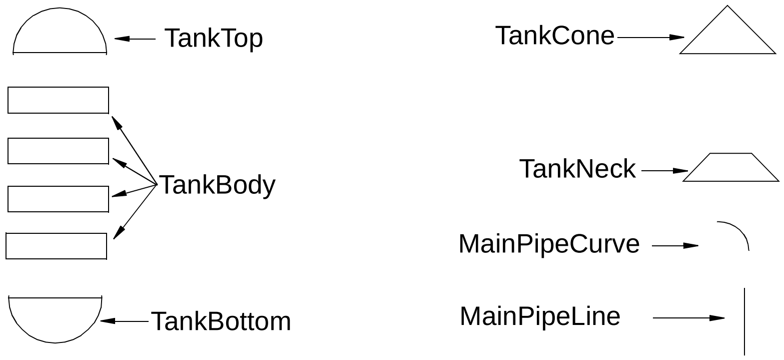


Figure 3-32. Ready-made static display elements

3.3.5 Setting Display Attributes

Attributes, such as display description, background color, display type and dialogs, are assigned to the displays. The display name is decided when you save the display.

For each customer-designed display it is possible to define ten dynamic function keys. The dynamic function keys can be defined to make a display exchange, present a display as an overlap display, start a dialog, or start an external application. The dynamic function keys are positioned below the display area in runtime. See Figure 4-1.

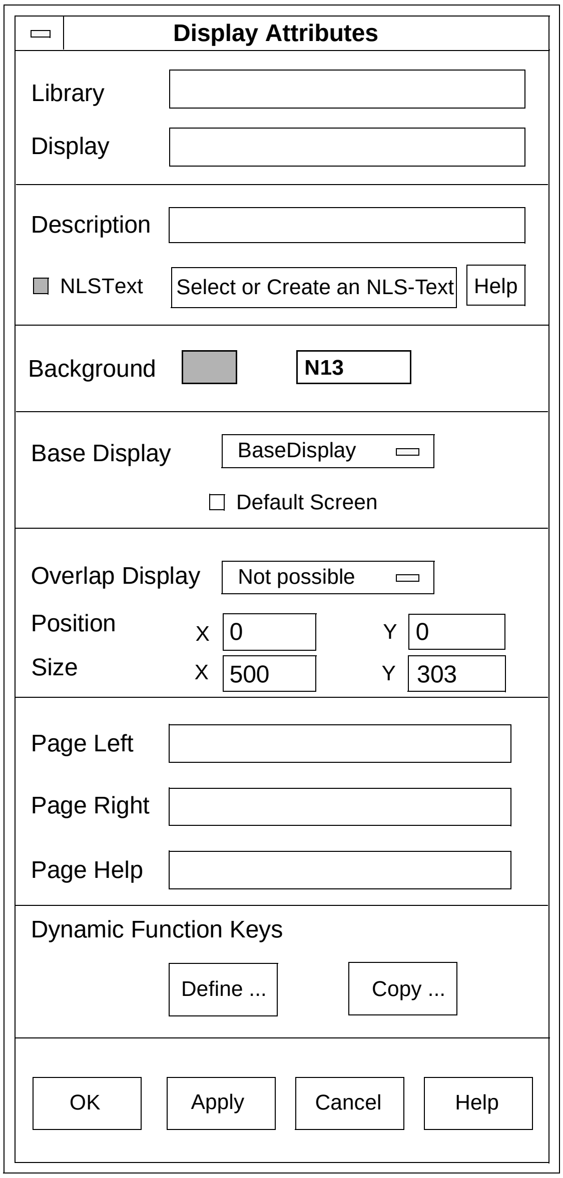
To set the attributes for a display, choose **Display Attributes** from the **Tools** menu.

NOTE

For Fixed Display, see Section 3.4 Special Operator Station Displays, background is the only valid display attribute.

NOTE

If you are working with a trend display, the display attribute box will look slightly different and contain entries to two additional subdialogs. The trend display attributes are described in Section 3.3.6 Setting Trend Display Attributes.



Background N13

Base Display BaseDisplay

Overlap Display Not possible

Position X 0 Y 0

Size X 500 Y 303

Figure 3-33. Display Attributes dialog box

Descriptions of the fields in the display attributes box:

Library

This field is updated automatically when the display is saved. If the display has been saved the library where the display has been saved appear in the top field. You cannot enter anything in this field.

Display

This field is updated automatically when the display is saved. If the display has been saved the display name appear in this field. You cannot enter anything in this field.

Description

Enter the display description in the name field. Both display name and display description appear in the display menu when the display has been installed. When the display is presented in runtime the display name, and display description appear in the display title.

NLS Text

For information about the NLS functions, see *AdvaCommand Localization User's Guide*

Background

Select color in the Colors palette and then click on the **Background** button. You can also enter the name of the color, for example, A10, and press the <**Return>** key. Default is dark grey (**N13**).

Base Display

You can define a display as a base display, an overlap display or both. A base display covers the whole display area, while an overlap display appears in a window on top of the display area.

The base display types are **Base Display** and **Not possible**. **Base Display** means that the display can be presented as a base display. **Not possible** means that the display can not be called up as a base display. There is also a dimmed third alternative, a question mark, that is not possible to select. The question mark only appears when the display attribute **Base Display** is set to something that Display Builder does not recognize.

Choose an alternative by pressing the select mouse button on the option menu and releasing it on the desired alternative.

Default Screen is a feature only available for base displays. If an operator station has two screens it is possible to direct displays from one screen to the other in runtime. A display that is called up while the pointer is located on one screen can be defined to appear on the other screen, if this function, the **Dedicated Screen** function, is activated on the other screen. If the operator station only uses one screen this is not valid. Click on the **Default Screen** button if you want the display to be presented on the **Dedicated Screen**, when this function is activated.

Overlap Display

An overlap display appears in a window on top of the display area. An overlap display can be of any size up to the size of a base display.

The overlap display types are **OverlapCut**, **OverlapZoom** and **Not possible**. **OverlapCut** cuts the display if the display is larger than the size of the overlap display area. Scroll bars appear in runtime to make it possible to see the whole display, if the display has been cut. **OverlapZoom** decreases the display to fit into the overlap display area. **Not possible** means that the display can not be called up as an overlap display. There is also a dimmed fourth alternative, a question mark, that is not possible to select. The question mark only appears when the display attribute **Overlap Display** is set to something that Display Builder does not recognize.

Choose an alternative by pressing the select mouse button on the option menu and releasing it on the desired alternative.

Position where the overlap display shall be presented in runtime. The **X** and **Y** positions for the overlap display can be changed here. You set X and Y coordinates to place the overlap display in the location of choice on the screen. The X and Y reference points are in the lower left-hand corner of the workspace. The overlap display can be moved in runtime.

Size of the overlap display area. The size you set here determines the size of the overlap display when it is called up in runtime. You can then resize it by dragging in runtime.

Page Left, Page Right

You can link other displays to a base display. The **Page Left** and **Page Right** function enable the operator to page between chained displays in runtime. If you, for example, press the key for Page Left on the operator’s keyboard in runtime, the display that you have described in this field will be displayed. Usually a display exchange is performed, that is another base display is presented, but if the display specified in this field is not possible to call up as base display it will be presented as an overlap display, if this is possible.

Enter the requested display name in the text field. It is important to get the case right in the display name in order to be able to find the display in runtime.

Page Help

You can link a help display to a display. The help display is intended to contain help for the operator. The **Page Help** display is always displayed as an overlap display. If you press the Help key on the operator’s keyboard, that is the key with a question mark, or click on the button with the question mark in the base display title in runtime, the display that you have specified in this field will be displayed.

Enter the requested display name in the text field. It is important to get the case right in the display name in order to be able to find the display in runtime.

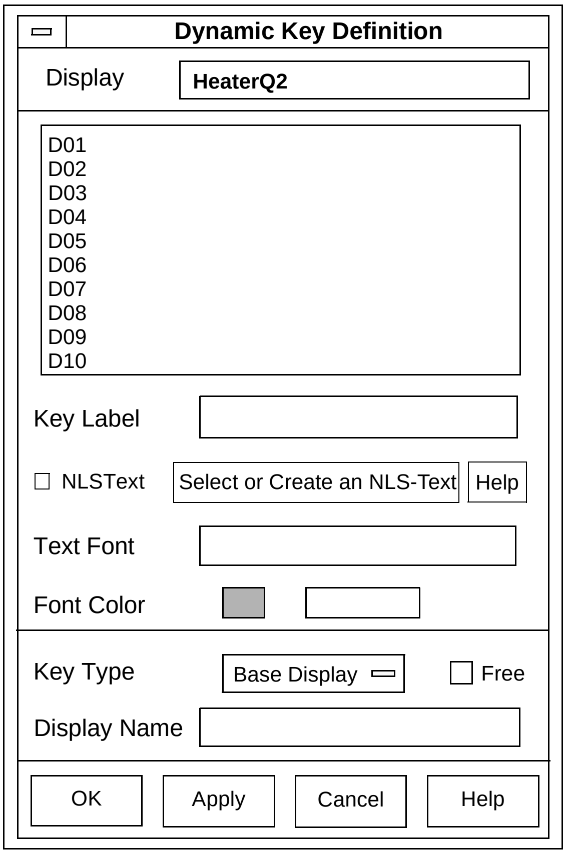
You create a help display in the same way as ordinary process displays. Use the help display or process display template.

Dynamic Function Keys

Customer-designed displays that are presented as base displays in runtime can define ten dynamic function keys. When the base display is presented in runtime the ten dynamic function keys will get the definition and key labels that have been defined for the display. The definition of the dynamic function keys is done in the **Dynamic Key Definition** dialog box.

If you click on **Copy** you can have the dynamic function key definitions for another display copied into the dynamic key definition dialog box for this display. A display selection dialog box is displayed where you can choose the display from which the keys are to be copied. When you click on **OK** the dynamic key definition dialog box appear with the parameters valid for the chosen display. You can then change these parameters if desired.

If you click on **Define** the dynamic key definition dialog box is displayed where you can define the dynamic function keys.



Display: HeaterQ2

Key Type: Base Display

Figure 3-34. Dynamic Key Definition dialog box

To view and enter parameters, click on a dynamic key, for example D05, and the valid parameters for this key are displayed in the lower portion of the dialog box. The upper part define the key's appearance, including the label, font and color of the text. The lower part define the key's action.

NOTE

> After setting the parameters for one key, click on **Apply** before you select a new key.

Descriptions of the fields in the dynamic key definition dialog box:

Display

This field is updated automatically when the display is saved. If the display has been saved the display name appears in this field. You cannot enter anything in this field.

D01-D10

A list of the dynamic function keys. When a key is selected the line is highlighted and the parameters for the key is displayed in the lower portion of the dialog box.

Key Label

The text you enter in this field is displayed on the dynamic function key in runtime when the display is presented. The number of visible characters depends on the font size.

Text Font

Font used for the key label. Recommended text font sizes are 20, 40 and 50. The available fonts are listed in Section 3.3.4.6 Text. Enter the requested text font in the name field. Default is helvetica-medium-r-normal-18, which is **FA40**.

Font Color

Color used on the key label. Select color in the Colors palette and then click on the **Font Color** button. You can also enter the name of the color, for example, A10, and press the **<Return>** key. Default is **A1**, which is black.

Type

Determines which action is to be performed by the key. The following actions are available:

- **Base Display**, a base display is presented.
- **Overlap Display**, an overlap display is presented.
- **Dialog**, a dialog is started.
- **External**, an external application is started.

Depending on the chosen action different parameter fields appear in the dialog box.

If you choose action **Base Display** you enter the display name in the field **Display name**. It is important to get the case right in the display name in order to be able to find the display in runtime. The display will be presented as a base display if this is allowed.

If you choose action **Overlap Display** you enter the display name in the field **Display name**. It is important to get the case right in the display name in order to be able to find the display in runtime. The display will be presented as an overlap display if this is allowed.

If you choose action **Dialog** a number of fields are displayed:

- **Dialog** - In the field **Dialog** you can enter the name of the dialog that shall be started. The dialog can be a standard dialog, for example, dcDoDialog, or a customer written dialog. If the dialog name is omitted but a process object name is entered in the field Object, the standard dialog for the type of object will be used.
- **Object** - In the field **Object** you enter a process object name. If you enter the string NIL instead of a process object name the process object located under the pointer will be the object the dialog gets to operate on.

- **Dialog Action** - In the field **Dialog Action** you can enter the action you want the dialog to perform. For a standard dialog this could, for example, be MAN, meaning manual mode. For a customer written dialog the string value is transferred to the dialog and the dialog itself defines possible and illegal strings.
- **Dialog Visible** - In the field **Dialog Visible** you can enter the values true or false. For standard dialogs true means that the dialog shall stay active when the dialog action has been performed. False means that the dialog shall be cancelled as soon as the dialog action has been performed. For a customer written dialog the boolean value is transferred to the dialog and the dialog itself defines its meaning.

NOTE

Only some actions (entered in the Dialog Action field) are possible to perform directly when a standard dialog is started. The intention is that this shall be improved in a later release.

If you choose action **External** a number of fields are displayed:

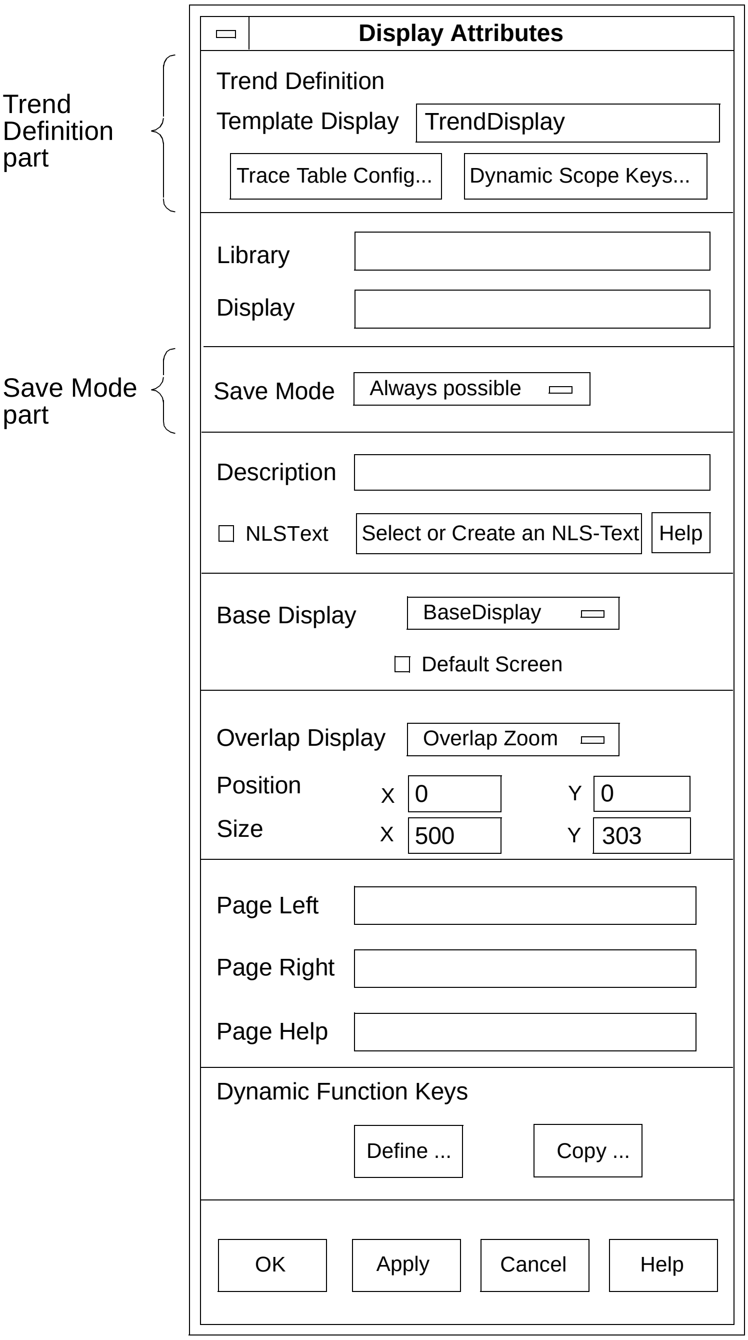
- **Function** - In the field **Function** you can enter information about what tool to activate, i.e, the name of the state when Type is State and the name of the application when Type is Local or Remote.
- **Type** - In the option menu **Type** you define the type of configuration tool. The alternatives are **State**, **Local** and **Remote**. The **State** type is for configuration tools designed in TeleUSE. The **Local** type is for application processes located in own node. Finally **Remote** type is for application processes located in another node.
- **Authority** - In the option menu **Authority** you define whether or not authority is needed to activate the tool. **True** means authority is required.
- **Password User** - In the field **Password User** you define if password is required before activation of a configuration tool, for example, On-line Builder. If password is required enter the name of the HP-UX user which holds the password, otherwise the field should be left empty. The HP-UX user may be any of the predefined user's as standard, or adaption or a new user.
- **User Name** - In the field **User Name** you define the user name at remote activation. Only valid if Remote type is selected.
- **Host Name** - In the field **Host Name** you define the name of the remote node. Only valid if Remote type is selected.
- **Log File** - In the field Log File you define the path to an error file. This is only to be used by non-window tools.

Free

It is possible to display all available action field parameters by using the **Free** format. In this format you can view and change all parameters that can be used for a dynamic function keys definition but the field parameter labels are of small guidance. You only need the **Free** format in special user defined applications. Click on **Apply** before you click on **Free**.

3.3.6 Setting Trend Display Attributes

The only properties that have to be specified when a trend display is built is the name and the library for the new display. This is done when the display is saved. But to further configure the new display, choose **Display Attributes** from the **Tools** menu.



Template Display: TrendDisplay

Library:

Display:

Save Mode: Always possible

Description:

☐ NLSText

Base Display: BaseDisplay

☐ Default Screen

Overlap Display: Overlap Zoom

Position X 0 Y 0

Size X 500 Y 303

Page Left:

Page Right:

Page Help:

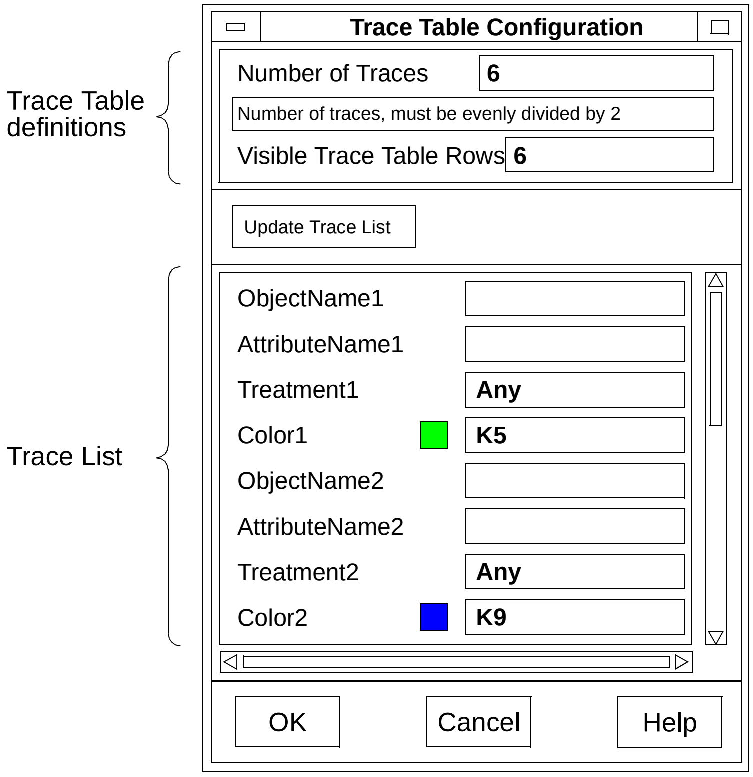
Figure 3-35. Display Attributes dialog box for trend displays

Setting display attributes for a trend display is similar to setting display attributes for other displays, see Section 3.3.5 Setting Display Attributes. For trend displays a **Trend Definition part** and a **Save Mode part** is added in the upper portion of the Display Attributes box. The Trend Definition part consists of three fields:

Template Display	This field shows that the TrendDisplay template has been selected. You cannot enter anything in this field.
Trace Table Configuration	Click on the button **Trace Table Config...** to present a dialog box in which you can define the log names and the object names that is to be included in the display.
Dynamic Scope Keys	Click on the button **Dynamic Scope Keys...** to present a dialog box in which you can change/define the dynamic scope keys for the trend display.

3.3.6.1 Trace Table Configuration

If you want to further configure the new trend display, that is to define the log names and the object names in the display, click on the **Trace Table Config** button in the Trend Definition field at the top of the Display Attribute dialog box and the **Trace Table Configuration** dialog box is displayed.



Number of Traces 6
Number of traces, must be evenly divided by 2
Visible Trace Table Rows 6

ObjectName1
AttributeName1
Treatment1 Any
Color1 🟩 K5
ObjectName2
AttributeName2
Treatment2 Any
Color2 🟦 K9

Figure 3-36. Trace Table Configuration dialog box

Trace Table definitions

The number of traces possible in a trend display can be configured in this dialog as well as the number of visible traces in the Trace Table. Independent of what the user defines the numbers are rounded up to even value. If you, select to have twelve traces and to display six of these then the table (displayed in the trend display) must be scrolled to view all traces. If no specification for the number of traces and visible traces are set then six traces are used and they are all shown in the Trace Table.

Update Trace List button

If you have changed the value for 'Number of Traces' you must update the Trace List, that is click on the **Update Trace List** button in the Trace Table Configuration dialog box. The Trace List is then updated with regard to the 'Number of Traces'.

Trace List

In the Trace List you specify the Object name, Attribute name, Treatment value and Color for each trace in the trend display.

ObjectName

Enter the names of the log source objects in the fields. The Object name can be changed in run-time.

AttributeName

Enter the names of the used object attributes, for example Measured Value (MV) in the fields.

The attribute can be changed in run-time. Only those attributes which are logged for the actual object are possible to select.

Treatment

Enter the log function selected for the log, that is how the log is calculated before it is stored in the process station or the IMS, in the fields. The log functions/treatments supported by the system are Mean, Mom (Momentary), Max, Min, Sum, Sum of squares, and Standard deviation.

The treatment can be changed in run-time. Note that the different type of logs must have been created to use the different treatments.

Color

Enter the color for each trace. The first six traces have different default colors. If you add more traces, you have to give each new trace a color by entering the name of the color in the Trace Table Configuration dialog box. Otherwise they will all have white as default color.

For more information about how you can change the trace color, see the subsection Extended Configuration in *AdvaCommand Basic Functions User's Guide*.

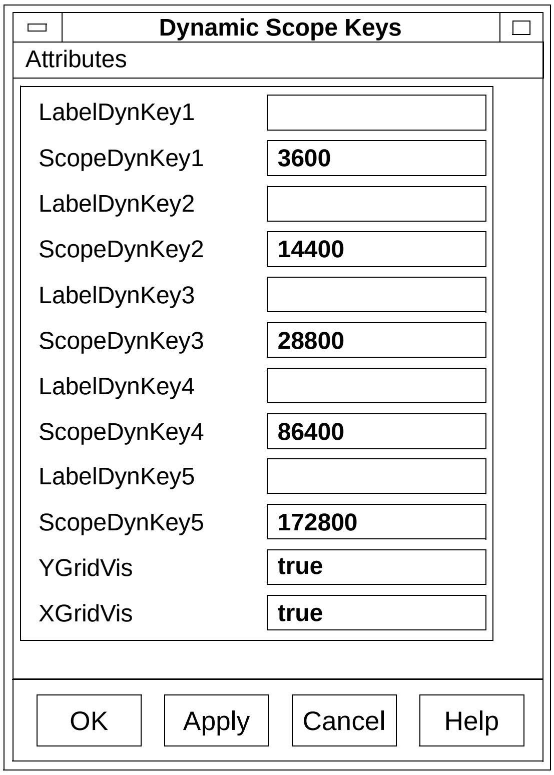
Exit

To save and exit the Trace Table Configuration, click on the **OK** button.

The Trace Table Configuration dialog box disappears.

3.3.6.2 Dynamic Scope Keys

If you want to change/define the dynamic scope keys in the new trend display, click on the **Dynamic Scope Keys** button in the Display Attributes dialog box and the **Dynamic Scope Keys** dialog box is displayed.



LabelDynKey1	
ScopeDynKey1	3600
LabelDynKey2	
ScopeDynKey2	14400
LabelDynKey3	
ScopeDynKey3	28800
LabelDynKey4	
ScopeDynKey4	86400
LabelDynKey5	
ScopeDynKey5	172800
YGridVis	true
XGridVis	true

Figure 3-37. Dynamic Scope Keys dialog box

Some of these properties can be changed at run-time, some can not. Those run-time changes are done in the Trace Configuration and Extended Configuration dialog boxes (see *AdvaCommand Basic Functions User's Guide Functions* or *AdvaCommand for Windows NT Basic Functions User's Guide*).

Attributes

The following attributes can be set for the scope keys of a trend display:

- **LabelDynKey1 - LabelDynKey5**

  Label strings displayed on the dynamic keys for the specified time scopes. If a LabelDynKey is left blank then it is computed from the time scope specified, that is 3600 is turned into "1 hour" (or what is appropriate in the used language).

- **ScopeDynKey1 - ScopeDynKey5**

  Time scope in seconds for the five dynamic keys used for time scope selection, for example 172800 = 2 days. Default value for the five keys are: 3600 (=1 hour), 14400 (=4 hours), 28800 (=8 hours), 86400 (=1 day), and 172800 (=2 days).

Additional attributes for the Trace Diagram are:

- **YGridVis**

  Decides whether the vertical grid lines, that is the Y grid lines, are visible (=true) or hidden (=false). Default value is 'true'.

- **XGridVis**

  Decides whether the horizontal grid lines, that is the X grid lines, are visible (=true) or hidden (=false). Default value is 'true'.

Exit

To save and exit the scope key configuration, click on the **OK** button.

3.3.7 Save Mode

The **Save Mode** in the Display Attributes dialog box is an attribute that controls how a trend display that is modified at run-time may be saved.

The possible values for this attribute are:

- **Always possible**

  The Trend display can always be saved at run-time (Default value).

- **Possible with Key**

  An authorization key in the functional keyboard is necessary to save the Trend display at run-time.

- **Not Possible**

  The Trend display can not be saved at run-time.

To save and exit the trend display configuration, click on the button **OK** in the Display Attributes dialog box. The Display Attributes dialog box is closed.

The other fields and buttons of the Display Attributes dialog box that are common to all display configuration are described in the Section 3.3.5 Setting Display Attributes.

3.3.8 Saving a Display

Use **Save As** and **Save** in the **File** menu when you want to save what you have built in the workspace. When the content in the workspace is saved as a display for the first time, the **Save As** dialog box is displayed where you must enter the display name.

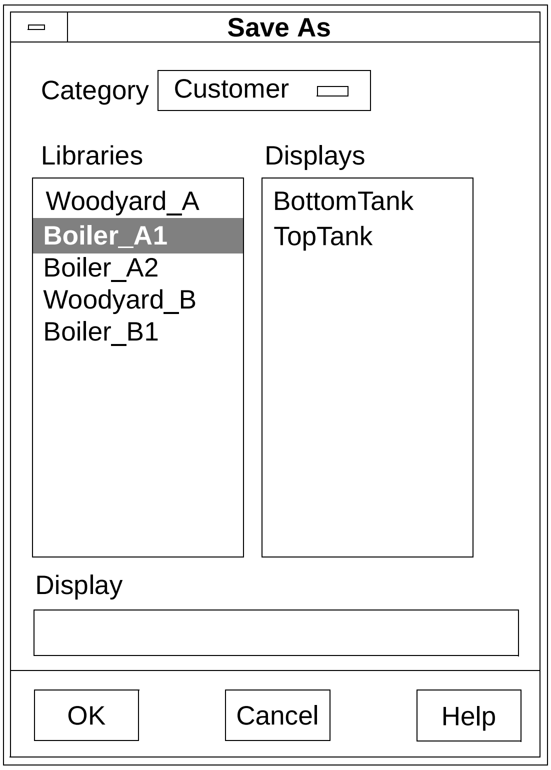


Figure 3-38. Save As dialog box

You must also indicate category and in which library the display is to be stored. The display must have a unique display name in the library. If it does not, a question, **The display already exists. Do you want to overwrite?** is displayed. The default is **Yes**. Once the content in the workspace is associated with a display name you only need to do **Save**. No dialog box is displayed.

To be able to see the display in runtime you have to install the display into the system, using **Display Installer**. How to install a display is described in the instruction book *AdvaCommand Basic Functions User's Guide* or *AdvaCommand for Windows NT Basic Functions User's Guide*.

3.3.9 Deleting a Display

When you delete a display, the source code for the display no longer exists. If, however, you have already installed the display, it remains available in runtime but you cannot modify it. If you have distributed the source code for a display to another operator station, it remains in that operator station**.**

To delete a display:

1. Choose **Delete** from the **Tools** menu in a workspace. It is of no importance that the workspace contains the display that shall be deleted or not. A dialog box is displayed.
2. Select Category and library where the display is located.
3. Click on the display name. Instead of selecting the display from the list, you can type the display name in the name field.
4. Click **OK**. The dialog box is replaced by another dialog box where Display Builder asks if you want to delete the display.
5. Click on **Yes**.

   The dialog box is removed and the display is no longer listed in the Display Builder display list. If the deleted display was displayed in the workspace from which it was deleted the workspace will disappear.

3.3.10 Closing a Workspace

Several workspaces can be displayed at the same time. To close, remove, a workspace choose **Close** from the **File** menu. If the display has been changed but not saved Display Builder asks you if you want to close the workspace anyway. The workspace is automatically closed when you exit Display Builder.

3.3.11 Exiting Display Builder

When you are ready with your editing session and want to exit Display Builder you click on **Exit** in the main Display Builder box. If the display has been saved, Display Builder removes all of its boxes and palettes, otherwise Display Builder asks you if you want to exit anyway.

3.4 Special Operator Station Displays

There are some displays that are used for special purposes:

- **FixedDisplay1-5**

  Fixed Display is the small display that is permanently displayed in the upper right hand corner on the operator station screen in runtime.

- **dcBasicDisplayKeys**

  dcBasicDisplayKeys defines the 20 direct selection keys positioned in the lower left hand corner on the operator's keyboard.

- **UserLogo**

  UserLogo is the small display that is displayed in the lower right hand corner on the operator station screen in runtime.

The displays **FixedDisplay1**, **FixedDisplay2** and **dcBasicDisplayKeys** in the category Standard in the library BasicFunctions is usable as templates. When you want to configure one of these displays, for example FixedDisplay1, you choose the display from the library BasicFunctions in the category Standard, edit the display and then **save it in the library BasicFunctions in the category Customer**. For FixedDisplay3-5, the display FixedDisplay1 is usable as template.

To create a new FixedDisplayX or a dcBasicDisplayKeysX display:

1. Choose **Open** in the main Display Builder box.
2. Select Category **Standard** in the option menu.
3. Select **Basic Functions** in the Library list.
4. From the list that is displayed, choose **FixedDisplay1**, **FixedDisplay2** or **dcBasicDisplayKeys**.

To create a new UserLogo display:

1. Choose **New** in the main Display Builder box.
2. Select **UserLogo** in the template list.

To save a special operator station display:

1. Choose **Save As** in the File menu.
2. Select Category **Customer** in the option menu.
3. Select **BasicFunctions** in the Library list.
4. Enter the display name using the name conventions described for each display below.

Then you install the display using Display Installer, see the instruction book *AdvaCommand Basic Functions*.

3.4.1 Fixed Display

Fixed Display is a small display that is permanently displayed in the upper right hand corner in runtime. One fixed display is displayed on each screen. On a single screen system the display FixedDisplay2 is redundant.

For X Workplaces the screen number corresponds to the number of the selected workplace in the X Workplace Server Login box, for example FixedDisplay5 is used for wp5.

If you have the AdvaCommand Process Sectioning software option you can configure one fixed display for each delegation. It is important that the name of the fixed display is put together correctly. The naming convention is FixedDisplayX[*delegation name*] where X is screen number and delegation name is optional, for example, FixedDisplay1Boiler.

When the display is installed, it will automatically be displayed.

If you have the AdvaCommand Process Sectioning software option and you have given the display a process delegation which is active, the display will automatically be displayed when it is installed - otherwise it will be displayed when the delegation is activated.

A Fixed display is built as any other display but it has a limited size. The only display attribute that is valid for a Fixed Display is background color.

3.4.2 Display Keys

In **dcBasicDisplayKeys** you can define the 20 direct selection keys on the operator's keyboard. The keys can be used to call up a display or start a dialog or an external application. You can use each key for two purposes by using the <**Shift**> key simultaneously. If you have the Process Sectioning software option installed in your operator station you can configure the direct selection keys different for each delegation.

The naming convention is dcBasicDisplayKeys[*delegation name*] where delegation name is optional, for example, dcBasicDisplayKeysBoiler. When you open the display dcBasicDisplayKeys an empty workspace is displayed. There is no point in configuring the workspace since this display is only to be used by the system to define keys.

When the display is installed, it will automatically be displayed.

If you have the AdvaCommand Process Sectioning software option and you have given the display a process delegation which is active, the display will automatically be displayed when it is installed - otherwise it will be displayed when the delegation is activated.

When **Display Attributes** is selected from the **Tools** menu a dialog box for configuration of the direct selection keys is displayed. The dialog box contains two lists, the one to the left is valid for the keys with no modifier, the list to the right is valid for the keys and the <**Shift**> modifier key.

To view and enter parameters, click on a direct selection key, for example, 11, and the valid parameters for this key are displayed in the lower portion of the dialog box.

NOTE

After setting the parameters for one key, click **Apply** before you select a new key.

When you have defined the keys you click **OK**. Then you have to save the display.

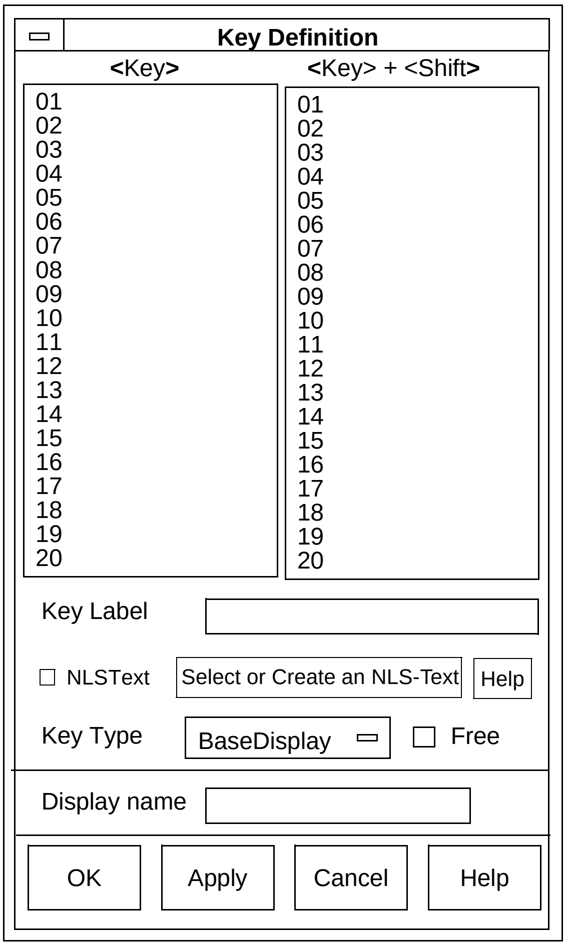


Figure 3-39. Key Definition dialog box

Description of the fields in the direct selection key definition dialog box:

Key Label

The text you enter in this field is displayed in the box so you can see which keys have been configured.

Key Type

Determines which action is to be performed by the key. The following actions are available:

- **Base Display**, a base display is presented.
- **Overlap Display**, an overlap display is presented.
- **Dialog**, a dialog is started.
- **External**, an external application is started.

Depending on the chosen action different parameter fields appear in the dialog box.

Base Display

If you choose action **Base Display** you enter the display name in the field **Display name**. It is important to get the case right in the display name in order to be able to find the display in runtime. The display will be presented as a base display if this is allowed.

Overlap Display

If you choose action **Overlap Display** you enter the display name in the field **Display name**. It is important to get the case right in the display name in order to be able to find the display in runtime. The display will be presented as an overlap display if this is allowed.

Dialog

If you choose action **Dialog** a number of fields are displayed:

- **Dialog**

  In this field you can enter the name of the dialog that shall be started. The dialog can be a standard dialog, for example, dcDoDialog, or a customer writ-ten dialog. If the dialog name is omitted but a process object name is entered in the field Object, the standard dialog for the type of object will be used.

- **Object**

  In this field you enter a process object name. If you enter the string NIL instead of a process object name the process object located under the pointer will be the object the dialog gets to operate on.

- **Dialog Action**

  In this field you can enter the action you want the dialog to perform. For a standard dialog this could, for example, be MAN, meaning manual mode. For a customer written dialog the string value is transferred to the dialog and the dialog itself defines possible and illegal strings.

- **Dialog Visible**

  In this field you can enter the values true or false. For standard dialogs true means that the dialog shall stay active when the dialog action has been performed. False means that the dialog shall be cancelled as soon as the dialog action has been performed. For a customer written dialog the boolean value is transferred to the dialog and the dialog itself defines its meaning.

NOTE

Just some actions (entered in the Dialog Action field) are possible to perform direct when a standard dialog is started. The intention is that this shall be improved in a later release.

External

If you choose action **External** a number of fields are displayed:

- **Function**

  In this field you can enter information about what tool to activate, that is, the name of the state when Type is State and the name of the application when Type is Local or Remote.

- **Type**

  In the option menu **Type** you define the type of configuration tool. The alternatives are **State**, **Local** and **Remote**. The **State** type is for configuration tools designed in TeleUSE. The **Local** type is for application processes located in own node. Finally **Remote** type is for application processes located in another node.

- **Authority**

  In the option menu **Authority** you define whether or not authority is needed to activate the tool. **True** means authority is required.

- **Password User**

  In this field you define if password is required before activation of a configuration tool, for example, On-line Builder. If password is required enter the name of the HP-UX or NT user which holds the password, otherwise the field should be left empty. The HP-UX or NT user may be any of the predefined user's as standard, or adaption or a new user.

- **User Name**

  In this field you define the user name at remote activation. Only valid if Remote type is selected.

- **Host Name**

  In this field you define the name of the remote node. Only valid if Remote type is selected.

- **Log File**

  In this field you define the path to an error file. This is only to be used by non-window tools.

Free

It is possible to display all available action field parameters by using the **Free** format. In this format you can view and change all parameters that can be used for a dynamic function keys definition but the field parameter labels are of small guidance. You only need the **Free** format in special user defined applications. Click on **Apply** before you click on **Free**.

3.4.3 User Logo

User Logo is a small display that is permanently displayed in the lower right hand corner in runtime. One user logo display is displayed on each screen. On a single screen system the display UserLogo2 is redundant. If you have the AdvaCommand Process Sectioning software option you can configure one user logo display for each delegation. It is important that the name of the user logo display is put together correctly. The naming convention is UserLogoX[*delegation name*] where X is screen number and delegation name is optional, for example, UserLogo1Boiler.

For X Workplaces the screen number corresponds to the number of the selected workplace in the X Workplace Server Login box, for example UserLogo5 is used for wp5.

A user logo display is built as any other display but it has a limited size. The only display attribute that is valid for a user logo is background color.

When the display is installed, it will automatically be displayed.

If you have the AdvaCommand Process Sectioning software option and you have given the display a process delegation which is active, the display will automatically be displayed when it is installed - otherwise it will be displayed when the delegation is activated.

3.5 Menu Bar Reference

This section illustrates and defines each of the functions that you can select from the Display Builder Menu Bar.

The Menu Bar is located in the upper portion of the workspace and consists of pull-down menus for all features and activities you will need to configure the display.

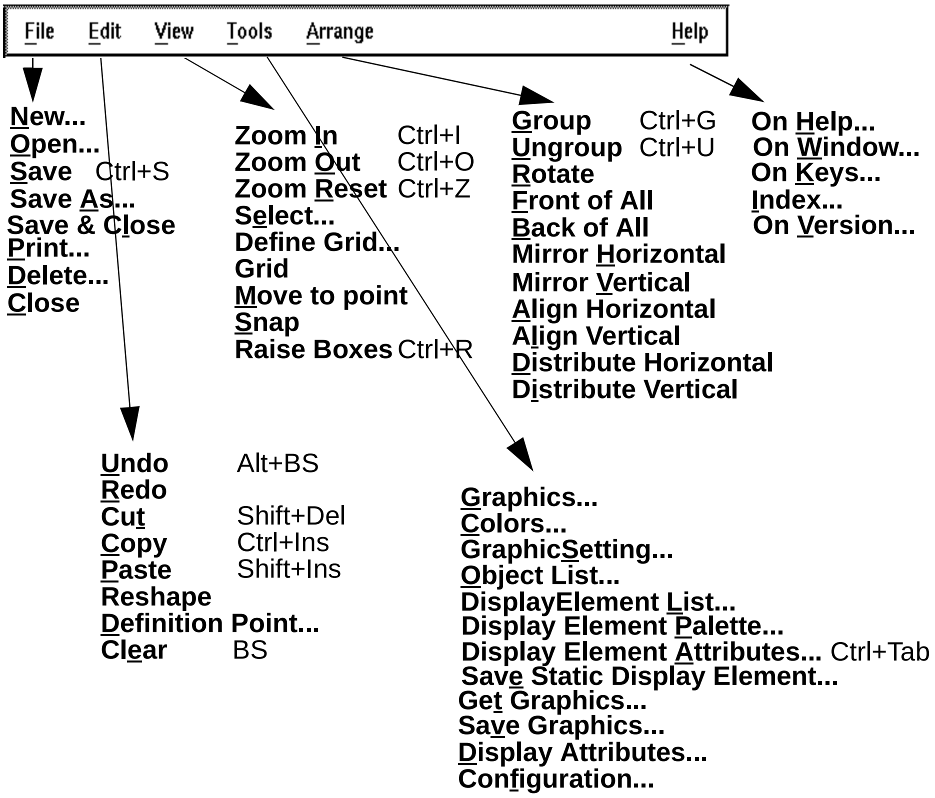


Figure 3-40. Menu bar and its pull-down menus

You can interact with the menus in the menu bar with **mnemonics**. Just press the <**Alt**> key and the underlined character in the menu, for example, when you press <**Alt**> and **<F>** the File menu is displayed.

The items in the menus can also be addressed by a single character, that is **mnemonics**. Instead of selecting the item by clicking, you can type the underlined character, for example, when you press <**s**> while the File menu is displayed, Save will be done.

Some items can also be activated without the menu displayed via **accelerators**. These items can have a key combination, for example, <**Ctrl**> **+** <**S**> **=** Save, <**Alt**> + **Backspace** = Undo. Instead of selecting the menu and then the item, enter the key combination directly. The accelerators are given in the menu. See Figure 3-40.

The items followed by dots, that is **...**, have a dialog box attached to them.

3.5.1 File

3.5.1.1 New

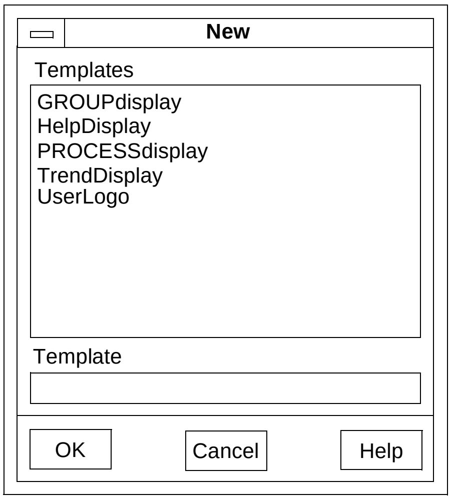


Figure 3-41. New dialog box

Choose **New** from the **File** menu when you want to open an empty workspace and build a new display. The dialog box contains a (scrolled) list of all existing templates. A template contains information specified for a display type, for example, the Group Display template, which contains a grid that helps you to position the display elements, and the Help Display template, which gives you a certain size of the display. Click on the desired template's name or enter it in the name field. When you click **OK** an empty workspace is displayed on the screen. Additional boxes is displayed according to what is suitable for the selected template.

3.5.1.2 Open

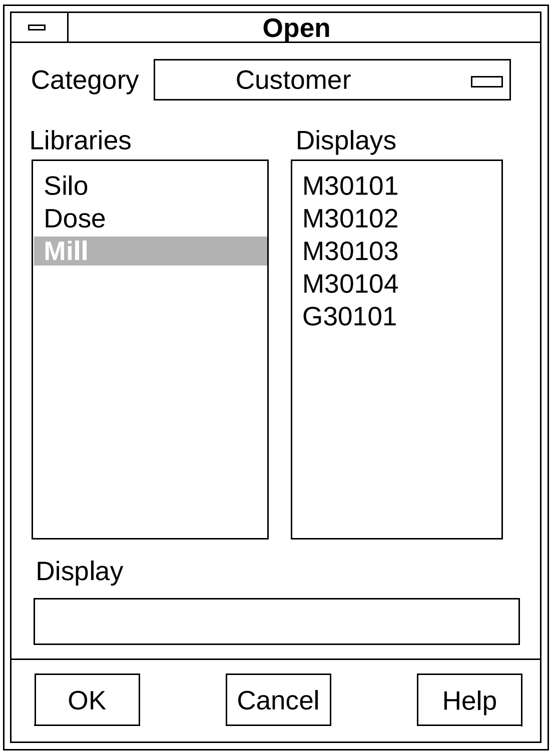


Figure 3-42. Open dialog box

Choose **Open** from the **File** menu when you want to edit a display that already exists. A dialog box is displayed. **Category** is a superior grouping of the displays and refers to the users and the authority. Displays stored in libraries under the categories **Standard** and **Adaptions** are locked for the user to change. In the **Customer** category you store your own defined displays. Click on the **Category** option menu and select **Customer**.

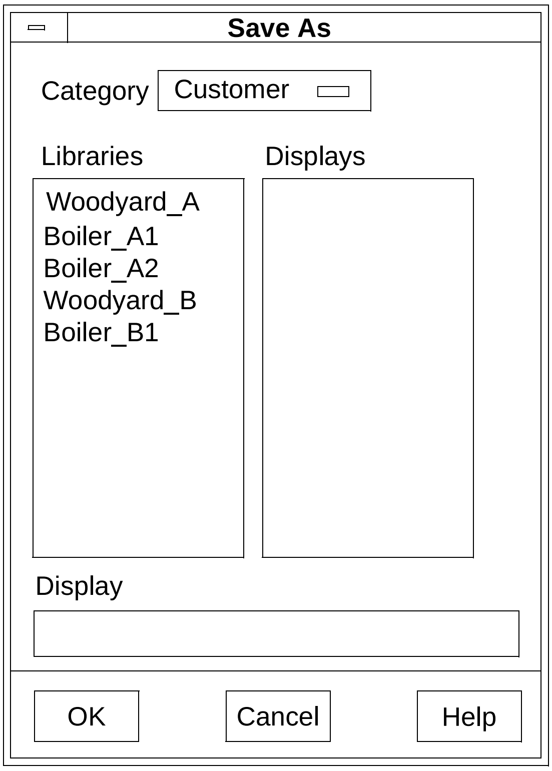
Two (scrolled) lists are shown in the dialog box. One list includes the libraries and one includes the displays within the selected library. Choose a library. A list of the displays within the library is shown. Click on the display name or enter the display name in the display name field. When you click **OK** a workspace containing the selected display is displayed on the screen. Additional boxes is displayed according to what is suitable for the display's template.

3.5.1.3 Save

Choose **Save** from the **File** menu when you want to save the content in a workspace. The content is saved with the display name that is written in the title bar of the workspace.

If a new display is to be saved for the first time, the display name is missing. The Display Builder then displays the **Save As** dialog box.

3.5.1.4 Save As



Category: Customer

Libraries:
- Woodyard_A
- Boiler_A1
- Boiler_A2
- Woodyard_B
- Boiler_B1

Figure 3-43. Save As dialog box

Choose **Save As** from the **File** menu when you want to save the content in a workspace and specify a display name. A dialog box is displayed. **Category** is a superior grouping of the displays and refers to the users and the authority. Displays stored in libraries under the categories **Standard** and **Adaptions** are locked for the user to change. In the **Customer** category you store your own defined displays. Click on the **Category** option menu and select **Customer**.

Two (scrolled) lists are shown in the dialog box. One list includes the libraries and one includes the displays within the selected library. Choose a library. A list of the displays within the library is shown. Click on a display name or enter the display name in the display name field. When you click **OK** the content in the workspace is saved with the specified display name.

A-Z are allowed characters for display names. The characters 0-9 are also allowed if they are not the first character.

3.5.1.5 Save & Close

Choose **Save & Close** from the **File** menu when you have finished your editing session with a display and want to save the content in the workspace, and then close the workspace.
The content is saved with the display name that is written in the title bar of the workspace, and the workspace disappears from the screen.

If a new display is to be saved for the first time, the display name is missing. The Display Builder then displays the **Save As** dialog box.

3.5.1.6 Print

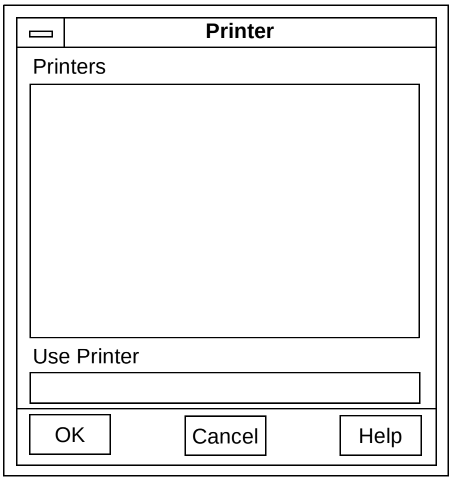
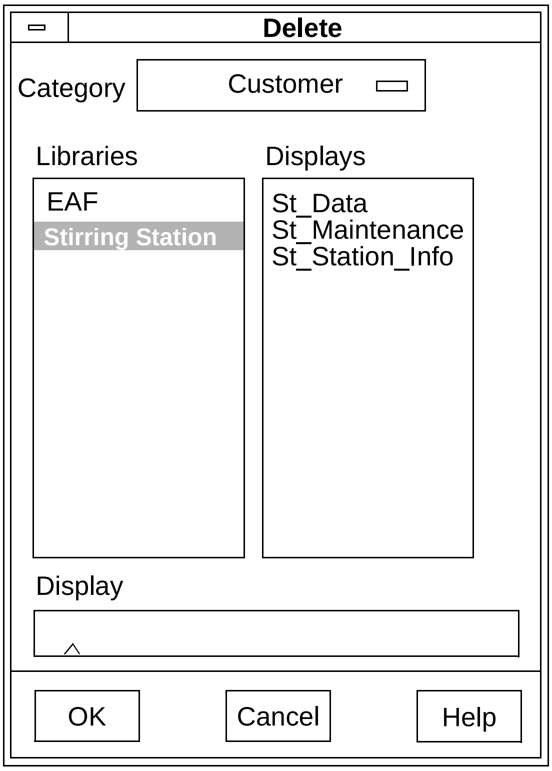


Figure 3-44. Printer dialog box

Choose **Print** from the **File** menu when you want to print a display. A dialog box with a list of the available printers is displayed. A printer may be color or black and white. Click in the list or enter a printer name in the name field. Click **OK**.

See *AdvaCommand Basic Functions User's Guide* or *AdvaCommand for Windows NT Basic Functions User's Guide* for information about configuration of printers.

3.5.1.7 Delete



Category Customer

Figure 3-45. Delete dialog box

Choose **Delete** from the **File** menu when you want to delete a saved display. **Category** is a superior grouping of the displays and refers to the users and the authority. Displays stored in libraries under the categories **Standard** and **Adaptions** are locked for the user to change. In the **Customer** category you store your own defined displays. Click on the **Category** option menu and select **Customer**.

Two (scrolled) lists are shown in the dialog box. One list includes the libraries and one includes the displays within the selected library. Choose a library. A list of the displays within the library is shown. Click on the display name, or enter the display name in the display name field. You can also select several displays by dragging in the display list. Click **OK**.

The dialog box is replaced by another dialog box where Display Builder asks **Do you want to delete the display?** The default answer is No. Click on **Yes** to delete the display. The dialog box is removed, and the display is no longer listed in the Display Builder display list. If the deleted display was displayed in the workspace from which it was deleted the workspace will disappear.

3.5.1.8 Close

Choose **Close** from the **File** menu when you want to close a workspace. The workspace disappears from the screen. You can also close the workspace by choosing **Close** in the workspaces **Window Menu** or close the workspace by double clicking on the **Window Menu Button**.

If you have made any changes in the display in the workspace, or if you have built a new display and forgot to save it, a dialog box is displayed. Display Builder asks **The display is not saved. All changes will be lost. Do you want to continue?** The default answer is No. If you answer Yes the workspace disappears from the screen and all changes in the display are lost. If you answer No the workspace remains on the screen.

3.5.2 Edit

3.5.2.1 Undo

Choose **Undo** from the **Edit** menu when you want to cancel the last action you performed to change the content of the display. This command is very useful if you make a mistake or simply change your mind about something you just did. You must remember, however, that only the last action you made prior to selecting this command is undone.

Undo does not support following actions:

- Top of All, Back of All
- Group
- Zoom In, Zoom Out
- Get Graphics
- Delete
- Save.

3.5.2.2 Redo

Choose **Redo** from the **Edit** menu to repeat the last action you took. This command also cancels the **Undo** command by reinstating the last change to the display.

3.5.2.3 Cut

Choose **Cut** from the **Edit** in the Edit menu when you want to remove the selected objects from the display and put them on a clipboard. You can **Paste** the objects in the clipboard to another part of the display, or to another display. If you **Cut** any display elements, the connection to the process object and its dialog and updating are included.

3.5.2.4 Copy

Choose **Copy** from the **Edit** menu to copy, but not to remove, the selected objects from the display and put them on the clipboard. You can **Paste** the copied objects in the clipboard to another part of the display, or to another display. If you **Copy** any display elements, the connection to the process object and its dialog and updating are included.

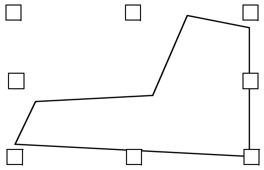
3.5.2.5 Paste

Choose **Paste** from the **Edit** menu to place the contents in the clipboard into the display. **Paste** is used together with **Cut** and **Copy** that puts objects in the clipboard. The contents of the clipboard is placed into the display at a location above and to the right of the copied or cut objects.

3.5.2.6 Reshape

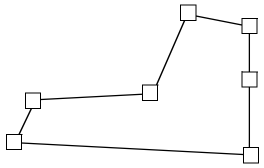
Choose **Reshape** from the **Edit** menu to change the shape of selected polyline or polygon graphical objects.

1. Select the objects that you want to reshape.



2. Choose **Reshape**.

   The selection handles of the selected object are moved to the end of each line.



3. Position the pointer on a selection handle.

   The pointer changes to:

4. Move the point of the object by dragging it to the desired position.

3.5.2.7 Definition Point

Choose **Definition Point** from the **Edit** menu to change the definition point of the selected objects to a new position. The position of the **Definition Point** effects the functions **Mirror Horizontal**, **Mirror Vertical**, **Align Horizontal**, **Align Vertical**, **Distribute Horizontal**, **Distribute Vertical** and **Rotate.** A dialog box containing nine buttons is displayed on the screen. Click on the button corresponding to the desired location of the definition point to select that position as the rotational axis of the selected objects. For example, if you click on the middle button in the dialog box, the definition point of all selected objects is the center of those objects.

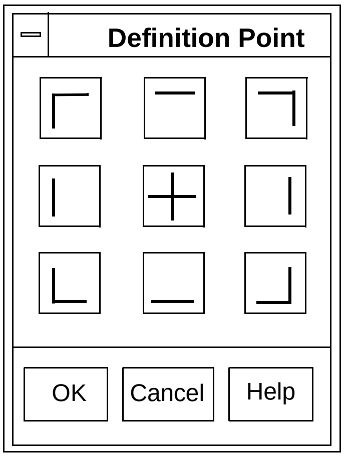


Figure 3-46. Definition Point dialog box

3.5.2.8 Clear

Choose **Clear** in the **Edit** menu to delete the selected objects and all linkages to process objects.

3.5.3 View

3.5.3.1 Zoom In

Choose **Zoom In** from the **View** menu to magnify the display in the workspace. The display is magnified by a factor of 1.618 to make fine details clearer. You can use **Zoom In** repeatedly to increase magnification. When you activate **Zoom In**, any selected object will appear in the middle of the workspace in the enlarged display. Use the scrollbar to view other objects that are not located in the middle of the workspace. Text is increased in steps while the line width is not affected.

3.5.3.2 Zoom Out

Choose **Zoom Out** from the **View** menu to reduce the display in the workspace. The display is reduced by a factor of 1.618 to enable you to view a larger area of the display with less attention to details. You can use **Zoom Out** repeatedly to decrease magnification.Text is decreased in steps while the line width is not affected.

3.5.3.3 Zoom Reset

Choose **Zoom Reset** from the **View** menu to return the display to its original screen size after **Zoom In** or **Zoom Out** has been used.

3.5.3.4 Select

Choose **Select** from the **View** menu to select objects in the workspace. The **Select** dialog box, shown below, is displayed so you can choose from three functions:

- Choose **All** to select all objects, both static and dynamic, in the workspace.
- Choose **Static** to select all static objects.
- Choose **Dynamic** to select all dynamic objects, that is display elements.

Dynamic is particularly useful if you want to create similar displays from existing displays. In situations where only the process objects differ, simply save the display with a new name and then use **Select Dynamic** and **Display Element Attributes** to change the process object names in the display elements in the newly created display.

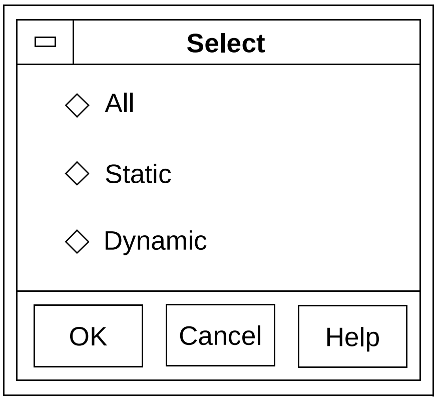
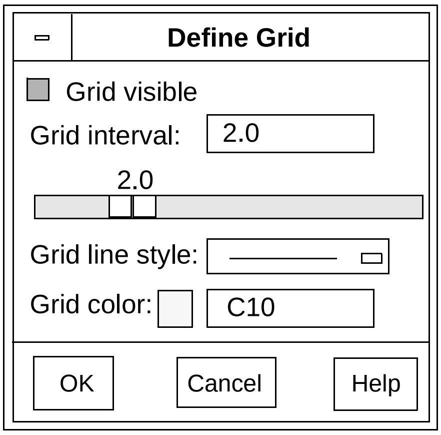


Figure 3-47. Select dialog box

3.5.3.5 Define Grid

Choose **Define Grid** from the **View** menu to set the interval and line style of the grid. Grid lines are useful when you are designing displays. You can easily turn them on and off. The grid is either a set of horizontal and vertical lines or a set of dots at intersections. You can turn the grid on and off, set the interval, the line style and the grid color in the **Define Grid** dialog box.



Grid visible

Grid interval: 2.0

2.0

Grid line style:

Grid color: C10

Figure 3-48. Define Grid dialog box

Grid Visible

Grid visible is a toggle button that indicates if the grid is visible or not. Click to change the current status.

Grid Interval

The grid consists of a number of intersecting vertical and horizontal lines or dots. To define the distance between the lines, enter a value in the field or move the slider located in the center of the box.

Grid Line Style

Grid lines can be any of a variety of different styles, that is dotted or continuous lines. To view the available line styles, click on the Grid line style field.

Grid Color

Color used on the grid. Check that Pen is active in the Colors palette. Select color in the Colors palette and then click on the Grid color button. You can also enter the name of the color, for example, B6, and press the <**Return**> key.

3.5.3.6 Grid

Choose **Grid** from the **View** menu to switch the grid on or off via a button (similar to the **Grid visible** button in **Define Grid**).

3.5.3.7 Move to Point

Choose **Move to Point** from the **View** menu to switch the function on or off via a button (similar to **Grid**). When active **Move to Point** control the position of a graphical object by attracting it to the nearest predetermined point of the nearest graphical object. Move to Point is useful when you want to attach graphical objects to each other. You have to position the pointer quite close to the object you want to attach the object to, but you don't have to position the pointer exact. If you position the pointer on a long distance from any graphical object the attraction doesn't take place.

For polylines and lines, predetermined points are identical to the points used when the objects were created. Circles have predetermined points at the 12, 3, 6, and 9 o'clock positions. Rectangles have predetermined points at all four corners and at the mid-point of each side. You can define additional points by using **Logical Point** in the **Graphics** box

NOTE

The logical point is a separate object. You must group the logical point and the object it belongs to.

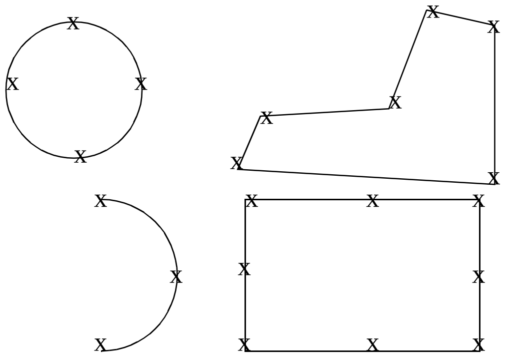


Figure 3-49. Predetermined points for some objects

Move to Point and **Snap** both control the position of a graphical object and both cannot be active at the same time.

3.5.3.8 Snap

Choose **Snap** from the **View** menu to switch the function on or off via a button (similar to **Grid**). When active **Snap** control the positioning of a graphical object by attracting it to the nearest intersection in the grid. **Snap** and **Move to Point** both control the position of a graphical object and both cannot be active at the same time.

3.5.3.9 Raise Boxes

Choose **Raise Boxes** in the **View** menu to move the Display Builder boxes in front of the workspace. The main Display Builder box is not effected.

3.5.4 Tools

3.5.4.1 Graphics

Choose **Graphics** from the **Tools** menu to display the **Graphics** box.

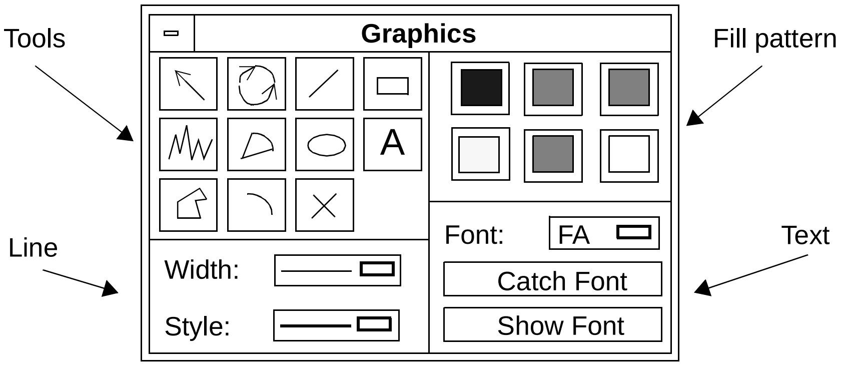


Figure 3-50. Graphics box

The **Graphics** box is divided into four segments: Tools, Fill pattern, Line and Text.

Tools

The default tool is the Select tool. The other tools stay active until the object is created. It then automatically changes back to the Select tool. By selecting a tool with double-clicking it will stay active until you choose another tool.

Select (the arrow symbol)

The Select tool is used to select one or several objects, both static and dynamic objects. It is also used to move and resize objects. See Section 3.3.4.2 Selecting Graphical Objects and Section 3.3.4.3 Moving and Resizing a Graphical Object.

Rotation

The Rotation tool is used to rotate one or several objects around its definition point. To rotate several objects the objects need to be grouped together first. See Section 3.3.4.4 Rotating a Graphical Object.

NOTE

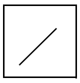
The object cannot rotate if it contains text.

Objects can also be rotated with the **Rotate** function in the **Arrange** menu.

Line

The Line tool is used to draw single lines. The line is drawn with the width and style attributes that is displayed in the Graphics box. The chosen Pen color in the Colors palette determines the color of the line. See Section 3.3.4.7 Line Appearance.

Click on the **Line** symbol in the **Graphics** box.



1. Press where you want the line to begin.
2. Drag and release the mouse button where you want the line to end.

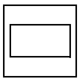
   A single line is drawn.

If you press the <**Shift**> key while you are dragging the line, it will be horizontal or vertical.

Rectangle

The Rectangle tool is used to draw rectangles. The rectangle is drawn with the line width, the line style and the fill pattern that is displayed in the Graphics box. The chosen Fill color and Pen color in the Colors palette determines the fill color and the line color of the rectangle.

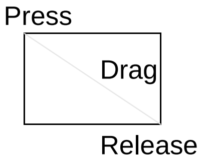
Click on the **Rectangle** symbol in the **Graphics** box.



1. Press where you want the first corner of the rectangle.

2. Drag diagonally to the opposite corner and release the mouse button.

   A rectangle is drawn.



If you press the <**Shift**> key while you are dragging, the rectangle is confined to a square with the longest sides of the rectangle serving as the sides of the square.

PolyLine

The PolyLine tool is used to draw connected lines. The lines are drawn with the width and style attributes that is displayed in the Graphics box. The chosen Pen color in the Colors palette determines the color of the line. See Section 3.3.4.7 Line Appearance.

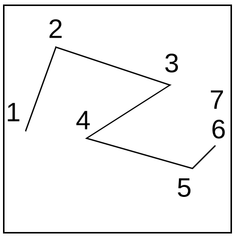
Click on the **PolyLine** symbol in the **Graphics** box.

1. Press where you want the line to begin.
2. Drag and release the mouse button where you want the line to end.
3. Click where you want the next corner to be.

4.-6. Repeat no 3 until the desired polygon is drawn.

7. Double-click to end the polygon.

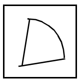
   A line is drawn from one click to the next forming a polyline.



Pie

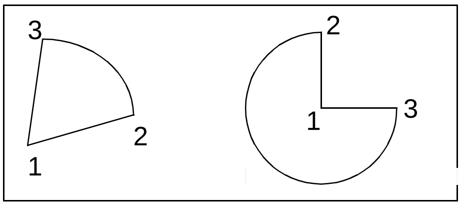
The Pie tool is used to draw pie sections. The pie section is drawn with the line width, the line style and the fill pattern that is displayed in the Graphics box. The chosen Fill color and Pen color in the Colors palette determines the fill color and the line color of the pie section.

Click on the **Pie** symbol in the **Graphics** box.



1. Press at the center point of the circle.
2. Drag and release where the radius is to end and the circle edge is to begin.
3. Press, drag and release where the circle edge is to end and the second radius line is to start.)

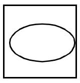
   A circle segment is drawn counterclockwise.



Ellipse

The Ellipse tool is used to draw ellipses (ovals). The ellipse is drawn with the line width, the line style and the fill pattern that is displayed in the Graphics box. The chosen Fill color and Pen color in the Colors palette determines the fill color and the line color of the ellipse.

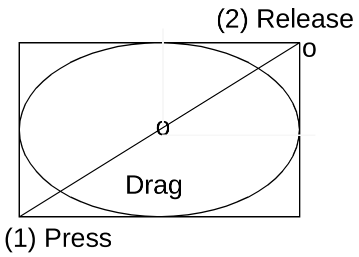
Click on the **Ellipse** symbol in the **Graphics** box.



1. Press where you want the first corner of the extended rectangle to be.

2. Drag and release the mouse button to the opposite corner of the extended rectangle.

   An ellipse is drawn within the extended rectangle.



If you press the **<Shift>** key when you are dragging, the ellipse will be confined to a circle with the longest side serving as the circle's diameter.

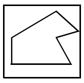
Text

The **Text** tool is used to write text. New text is written with the font that is selected in the Graphics box. The chosen Pen color in the Colors palette determines the color of the text. You end text insertion by clicking in the workspace. When text is modified the current font and color in the Graphics box and the Colors palette have no effect on the text that is changed. See Section 3.3.4.6 Text.

Polygon

The Polygon tool is used to draw polygons. The polygon is drawn with the line width, the line style and the fill pattern that is displayed in the Graphics box. The chosen Fill color and Pen color in the Colors palette determines the fill color and the line color of the polygon.

Click on the **Polygon** symbol in the **Graphics** box.

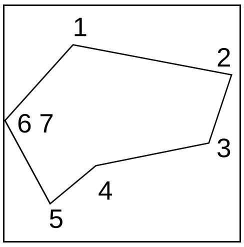


1. Press where you want the line to begin.
2. Drag and release the mouse button where you want the line to end.
3. Click where you want the next corner to be.

4.-6. Repeat no 3 until the desired polygon is drawn.

7. Double-click to end the polygon.

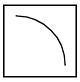
   A line is drawn from one click to the next. After the double-click, a line to the first click is automatically drawn forming a polygon.



Arc

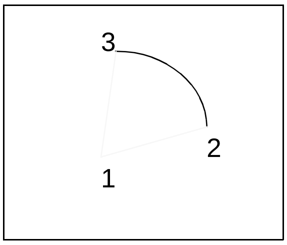
The Arc tool is used to draw arcs. The arc is drawn with the line width and the line style that is displayed in the Graphics box. The chosen Pen color in the Colors palette determines the line color of the arc.

Click on the **Arc** symbol in the **Graphics** box.



1. Press where the center of the imaginary circle is to be located.
2. Drag and release where the arc is to begin.
3. Press again, drag and release where the arc is to end.

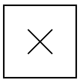
   An arc is drawn from the second to the third click. The arc is drawn counterclockwise.



Logical Point

The Logical Point tool is used to define logical entries and exits to an object. Logical points are, for example, the entry point and the exit point of a pump symbol. This makes it easier to connect the pipes to the pump in the same way in all displays.

Click on the **Logical Point** symbol in the **Graphics** box.



Click where you want the logical point to be.

The logical point is used together with the predetermined points in **Move to Point** from the **View** menu.

NOTE

> The logical point is a separate object. You must group the logical point and the object it belongs to.

Fill pattern, Line and Text

Fill pattern

Fill pattern is valid for the graphical objects Rectangle, Pie, Ellipse and Polygon. One of the fill pattern is transparent, that is no fill pattern (and fill color) at all. See Section 3.3.4.5 Fill Pattern.

Line

The line attributes **Width** and **Style** is valid for the graphical objects Line, Rectangle, PolyLine, Pie, Ellipse, Polygon and Arc. One of the line styles is transparent, that is no line at all. See Section 3.3.4.7 Line Appearance.

Text

Text **Font** is a combination of both font, style and size. It is only valid for text objects. See Section 3.3.4.6 Text.

If an object is selected when fill pattern, line attribute or text font is changed the changes affects the selected object directly.

Exit

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **Graphics** box.

3.5.4.2 Colors

Choose **Colors** from the **Tools** menu to display the **Colors** palette. The **Colors** palette, which is built up as a matrix, has space for 192 colors. Each color has an identity depending on where in the palette the color is located. The palette is grouped depending on the use of colors.

The first two rows contains colors in the grey-scale and is suitable to use when you are designing the static part and background. These colors are identified as A1-A16 and B1-B16.

The next two rows contains colors that are used by the system, for example, on window frames and in system displays. These colors are identified as C1-C16 and D1-D16.

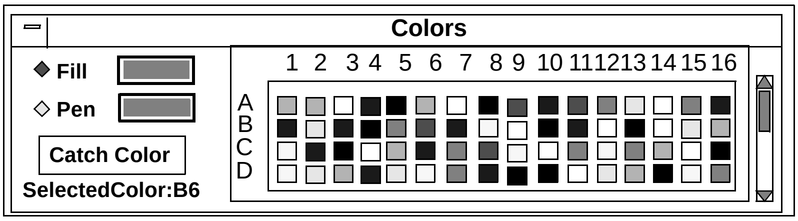
NOTE

Do not change these colors because any change will affect the system.

The colors on the E row can be used to convert displays from Tesselator to AdvaBuild displays. They are identified as E1-E16.

The rows with colors identified as F1-F16, G1-G16 and H1-H16, contains customer-designed colors. These colors can be used as media colors symbolizing water, oil, main flow, secondary flow, etc.

The last section contains colors used in display elements. They show the status and values of the display elements such as alarm, block, select, output values and measured values. These colors are identified as K1-K16, L1-L16, M1-M16 and the flashing colors N1-N16. If you change these colors, the display elements are affected.



SelectedColor:B6

Figure 3-51. Colors palette

You can apply colors to fill an object, for example, an rectangle, or to set the line or text color on an object. Fill color is valid for the graphical objects Rectangle, Pie, Ellipse and Polygon. Pen color is valid for the graphical objects Line, Rectangle, PolyLine, Pie, Ellipse, Text, Polygon and Arc.

Click on the **Fill** button when you want to set the fill color. Click on the color you want. Fill color has no effect when fill pattern, in the Graphics box, is set to transparent.

Click on the **Pen** button when you want to set the line and text color. Click on the color you want. The pen color has no effect on a line when line style, in the Graphics box, is set to transparent.

The color you choose remains in effect until you choose another color.

If an object is selected when fill color or pen color is changed the changes affects the selected object directly.

Exit

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **Colors** palette.

3.5.4.3 GraphicSetting

Choose **GraphicSettings** from the **Tools** menu to define, select or delete a graphic setting. With a graphic setting it is possible to combine attributes from both the Graphics box and the Colors palette. Attributes that can be included in a graphic setting is Fill color, Pen color, Fill pattern, line Width, line Style, Font and Tool. A name identifies the graphic setting. If you, for example, want to define a graphic setting for main water flow, that you want to draw as a thick blue line, you set Pen color to a blue color, choose a thick line width, continuous line as line style and click on the Line tool. When you save this as a graphic setting the involved attributes are Pen color, line Width, line Style and Tool. When the graphic setting is selected the attributes in the Graphics box and Colors palette is set to draw a thick blue line.

The **GraphicSetting** box is a scrolled list with the names of the graphic settings.

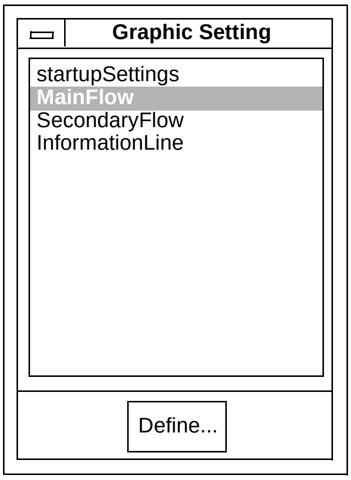
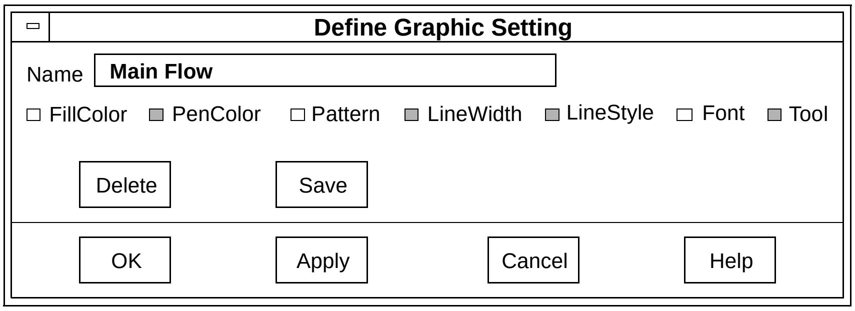


Figure 3-52. Graphic Setting box

To add a graphic setting to the list click on **Define**. A new dialog box is displayed.


Define Graphic Setting
Name
☐ FillColor ■ PenColor ☐ Pattern ■ LineWidth ■ LineStyle ☐ Font ■ Tool
Delete
Save
OK
Apply
Cancel
Help

Name: Main Flow

Figure 3-53. Define Graphic Setting box

1. Set the attributes in the **Colors** palette and the **Graphics** box.
2. Click on the attribute buttons that you want to be valid for this graphic setting, for example, Pen color and Tool.
3. Enter a name of the graphic setting.
4. Click **Apply** if you want to define this graphic setting temporary for this session with Display Builder or click **Save** if you want to save this on file for this and future sessions with Display Builder. The name you have entered is displayed in the **GraphicSetting** box.

You close the **Define Graphic Setting** box by clicking **OK** or Cancel. If the defined graphic setting was defined temporary a dialog box is displayed and Display Builder asks **The changes has not been saved. Do you want to save them?** If you answer Yes all the temporary defined graphic settings are saved on file.

To modify a graphic setting from the list, click on the name first and then click on **Define.** When you have made your changes save it to file or temporary with Save or Apply (**OK**).

To select one of the graphic settings defined in the list, simply click on the name. If the graphic setting include a tool you can begin to draw in the workspace at once. The tool stays active until you choose another tool.

To delete a graphic setting from the list, click on the name first and then click on **Define**. Click on **Delete** in the Define Graphic Setting box and the name of the graphic setting is removed from the list.

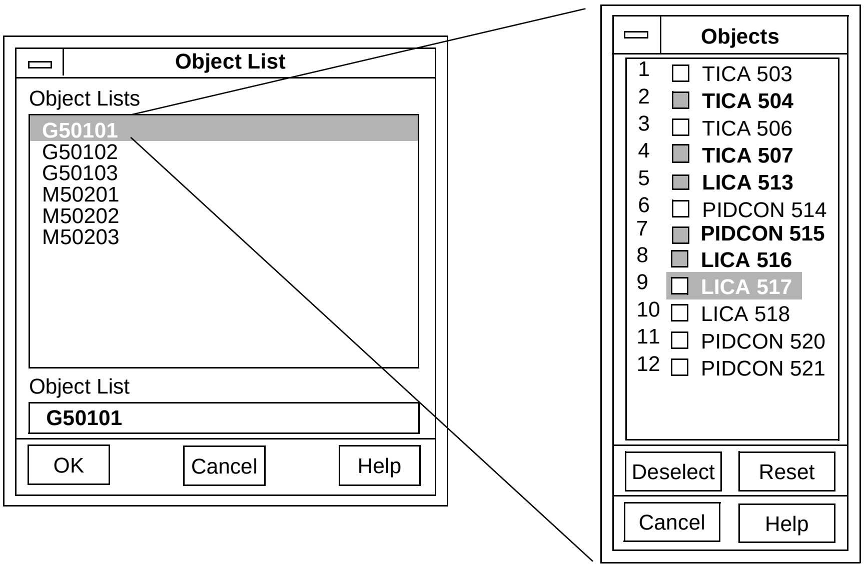
Exit

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **GraphicSetting** dialog box.

3.5.4.4 Object List

Choose **Object List** from the **Tools** menu to display the available object lists. Instead of having to write the process object name that shall be connected to a display element in the display element attributes box, you can use an object list. An object list is an ASCII file which contain process object names. The object lists must be named "**<filename>.ot"** and put into the directory /products/data/customer/OS/lists.

To display an object list you select one of the object lists in Object List dialog box. Click **OK,** and the Object List dialog box is replaced by the selected object list. The object list contains a list of all the object names in the selected ASCII file.



Object Lists:
G50101
G50102
G50103
M50201
M50202
M50203

Object List: **G50101**

1 ☐ TICA 503
2 ▨ **TICA 504**
3 ☐ TICA 506
4 ▨ **TICA 507**
5 ▨ **LICA 513**
6 ☐ PIDCON 514
7 ▨ **PIDCON 515**
8 ▨ **LICA 516**
9 ☐ **LICA 517**
10 ☐ LICA 518
11 ☐ PIDCON 520
12 ☐ PIDCON 521

Figure 3-54. Object List dialog box and a selected object list

To connect a process object to a display element using an object list, first select a process object from the object list and choose a display element from a display element palette or the display element list. Then click in the workspace to position the display element in the display. Now the connection is done. The marker to the left of the process object name in the object list indicates that the object has been connected to a display element.

To reset the markers to the left of the process object name in the object list, click **Reset**.

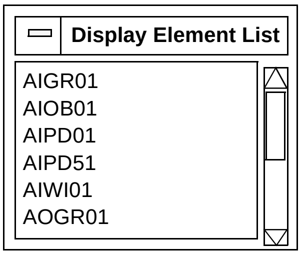
To deselect a highlighted process object name in the object list, click **Deselect**.

Exit

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **Object List**.

3.5.4.5 Display Element List

Choose **Display Element List** from the **Tools** menu to get a listing of all available display element in alphabetical order.



AIGR01
AIOB01
AIPD01
AIPD51
AIWI01
AOGR01

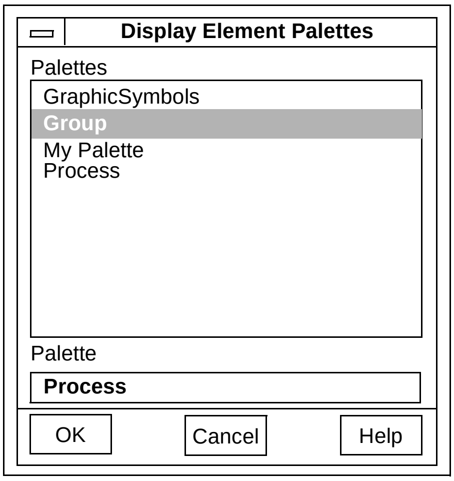
Figure 3-55. Display Element List box

To insert a display element in a display, click on the display element's name to select it. Then click in the workspace where you want the display element. If you double-click the display element's name in the list, it is active until you click on another tool.

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **Display Element List**.

3.5.4.6 Display Element Palette

Choose **Display Element Palette** from the **Tools** menu to display a list of all display element palettes.



Palettes
GraphicSymbols
Group
My Palette
Process

Palette
Process

Figure 3-56. Display Element Palettes box

To display a palette, click on a palette's name to select it or enter the name in the name field. Click **OK**. The palette you selected is displayed.

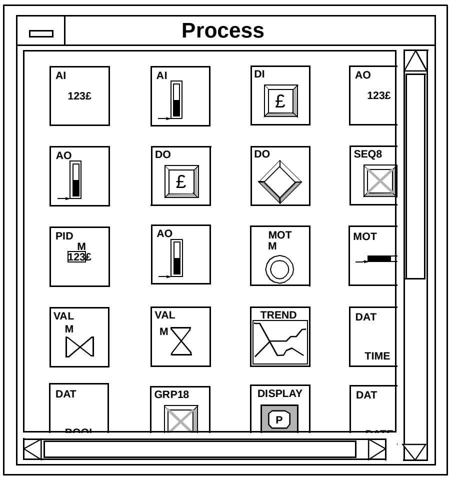


Figure 3-57. Example of a display element palette

If the palette contains many display elements, use the vertical and horizontal scrollbars. You can also resize the palette by dragging.

To insert a display element in a display.

1. Click on the desired display element to select it. The display element is highlighted.
2. Click in the workspace where you want the display element.

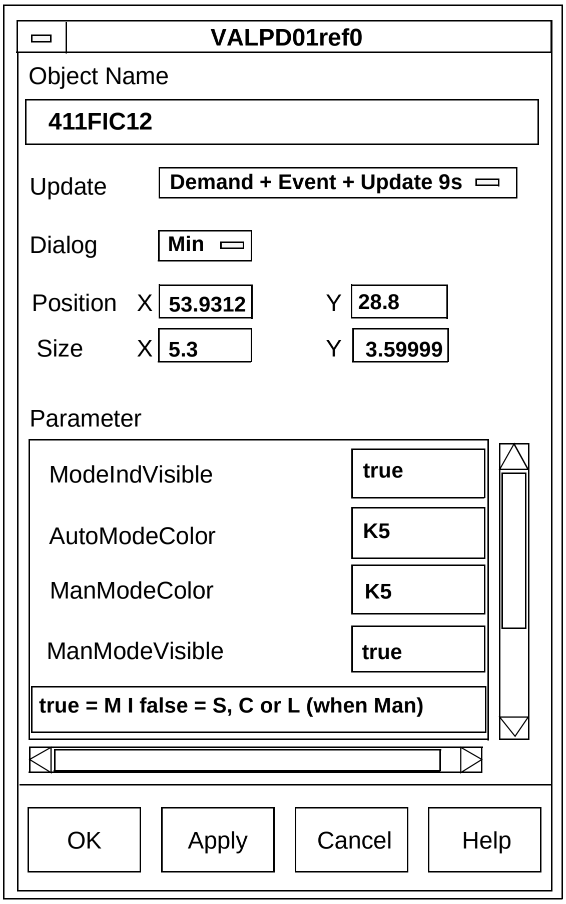
If you double-click the display element in the palette, it is active until you click on another tool.

Exit

Double-click on the **Window menu button** or choose **Close** from the **Window menu** to close the **Display Element Palette**.

3.5.4.7 Display Element Attributes

Choose **Display Element Attributes** from the **Tools** menu to display the attributes for a display element's presentation and dialog. You can also double click on the display element.



VALPD01ref0

Object Name: 411FIC12

Update: Demand + Event + Update 9s

Dialog: Min

Position X: 53.9312 Y: 28.8

Size X: 5.3 Y: 3.59999

Parameter

ModeIndVisible	true
AutoModeColor	K5
ManModeColor	K5
ManModeVisible	true

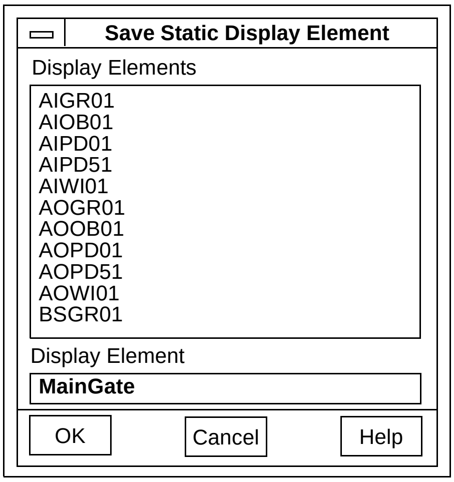
true = M I false = S, C or L (when Man)

Figure 3-58. Example of an attribute box for a display element

See Section 3.2.3.2 Setting Attributes for a Display Element for more information.

3.5.4.8 Save Static Display Element

Choose **Save Static Display Element** from the **Tools** menu to save graphics (without any dynamic behavior) that you want to reuse. When a static display element is changed and saved all displays that have used the static display element is affected.



Display Element: **MainGate**

Figure 3-59. Save Static Display Element box

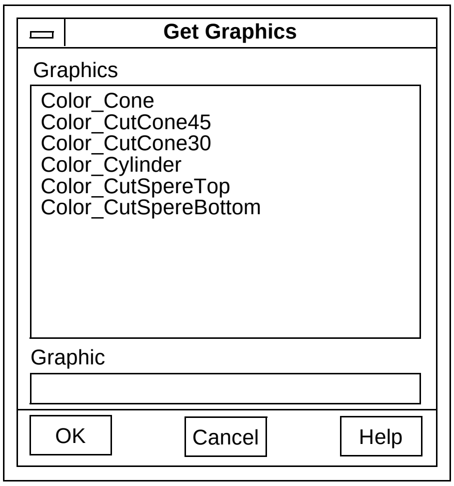
To save a graphic:

1. Select the graphics in the workspace that you want to save as a display element.
2. Select **Save Static Display Elements** from the **Tools** menu. A dialog box is displayed.
3. Enter a name of the static display element.
4. Click **OK**.

   The static display element is found in the Display Element List.

3.5.4.9 Get Graphics

Choose **Get Graphics** from the **Tools** menu to insert saved composite graphics in the workspace. The two functions **Save Graphics** and **Get Graphics** is used when you want to reuse static graphics in displays. The graphics are saved with the **Save Graphics** function and inserted with the **Get Graphics** function. The graphics are copied into the workspace, that is if the saved graphics is changed it doesn't effect the displays that have used the graphics. This behavior can be accomplished by using static display elements instead, see Section 3.3.4.9 Static Display Elements.



Get Graphics

Graphics

Color_Cone
Color_CutCone45
Color_CutCone30
Color_Cylinder
Color_CutSpereTop
Color_CutSpereBottom

Graphic

Figure 3-60. Get Graphics dialog box

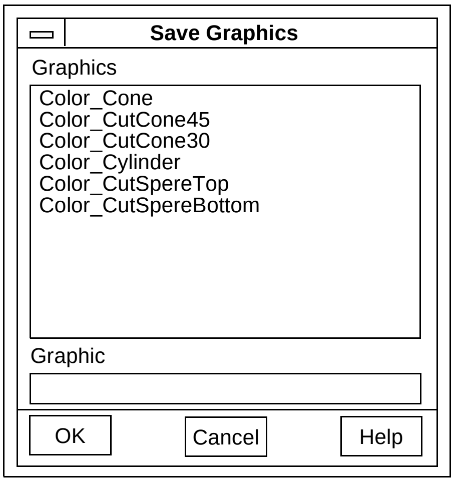
To insert saved graphics:

1. Select the name of the graphic you want to use.
2. Click **OK**.

   The dialog box is removed and the graphics is positioned in the middle of the workspace. The objects in composite graphics are grouped together. To be able to select and manipulate a single graphical object in a composite graphics use **Ungroup** from the **Arrange** menu.

3.5.4.10 Save Graphics

Choose **Save Graphics** from the **Tools** menu to save graphics that you want to reuse. The graphics is put together to composite graphics and saved with a name. The two functions **Save Graphics** and **Get Graphics** is used when you want to reuse static graphics in displays. The graphics are saved with the **Save Graphics** function and inserted with the **Get Graphics** function. The graphics are copied into the workspace, that is if the saved graphics is changed it doesn't effect the displays that have used the graphics. This behavior can be accomplished by using static display elements instead, see Section 3.3.4.9 Static Display Elements.



Save Graphics

Graphics

Color_Cone
Color_CutCone45
Color_CutCone30
Color_Cylinder
Color_CutSpereTop
Color_CutSpereBottom

Graphic

Figure 3-61. Save Graphics dialog box

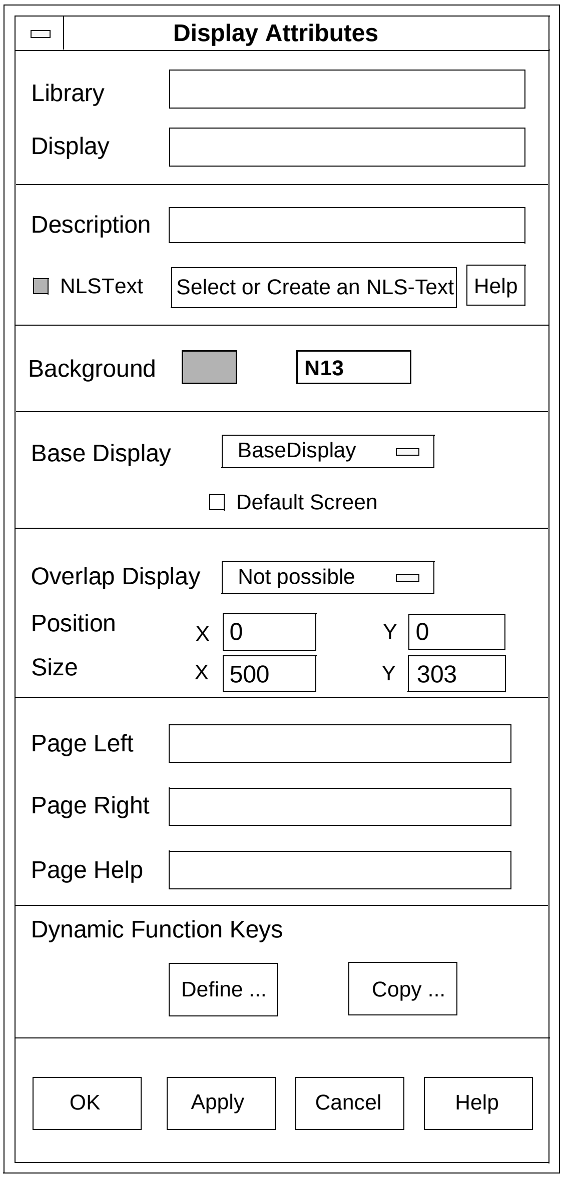
To save graphics as composite graphics:

1. Select the static graphics you want to reuse.
2. Enter a name in the name field in the dialog box.
3. Click **OK**.

   The dialog box is removed.

3.5.4.11 Display Attributes

Choose **Display Attributes** from the **Tools** menu to define the behavior and appearance for the display. A dialog box is displayed.



Library
Display
Description
▨ NLSText
Background ▨ N13
Base Display: BaseDisplay
☐ Default Screen
Overlap Display: Not possible
Position X 0 Y 0
Size X 500 Y 303
Page Left
Page Right
Page Help

Figure 3-62. Display Attributes dialog box

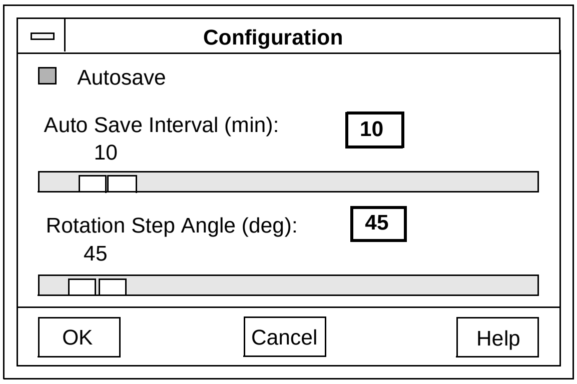
For more information, see Section 3.3.5 Setting Display Attributes.

3.5.4.12 Configuration

Choose **Configuration** from the **Tools** menu to configure Display Builder. Display Builder is designed to give you a flexible, easy-to-use tool to configure your own displays. In addition default values for quick choices, you can also configure the editor.

The following items can be configured:

- Automatic save
- Rotation step angle



Auto Save Interval (min): 10

10

Rotation Step Angle (deg): 45

45

Figure 3-63. Configuration dialog box

Auto Save

When you are configuring displays, Display Builder can automatically save the display in the workspace. The default interval value is 10 minutes, but you can change it by dragging the slider or entering a value in the auto save interval field. The time range is 1-60 minutes in one-minute steps. You can switch **Auto save** off. Click **OK** to apply the changes. The dialog box is removed.

Rotation Step Angle

The rotation step angle for **Rotate** in the **Arrange** menu has a default value of 45 degrees. To change the value, drag the slider to the value you want or enter a value in the rotation step angle field. The angle range is 0-360 degrees in one-degree steps. Click **OK** to apply the changes. The dialog box is removed.

3.5.5 Arrange

3.5.5.1 Group

Choose **Group** from the **Arrange** menu to group the objects you have selected and treat them as a single entity. You can then move the larger entity or otherwise modify it as a whole, without regard to its individual components. The two functions **Group** and **Ungroup** is used to get several objects to appear as an entity and then divide them into individual objects again. A group is hierarchical, that is a group can be included in another group.

3.5.5.2 Ungroup

Choose **Ungroup** from the **Arrange** menu to ungroup the objects you have selected in order to treat them as individual objects in the display. The two functions **Group** and **Ungroup** is used to get several objects to appear as an entity and then divide them into individual objects again. A group is hierarchical, that is a group can be included in another group. When **Ungroup** is used, those objects which are groups within the group are not affected.

3.5.5.3 Rotate

Choose **Rotate** from the **Arrange** menu to rotate the selected objects. The default rotation step angle is 45 degrees. You can change the rotation step angle by choosing **Configuration** from the **Tools** menu. The objects are rotated counterclockwise.

Objects can also be rotated with the **Rotate** tool in the Graphics box.

3.5.5.4 Front of All

Choose **Front of All** from the **Arrange** menu to move the objects you have selected in front of the other objects in the display. All selected objects remain selected.

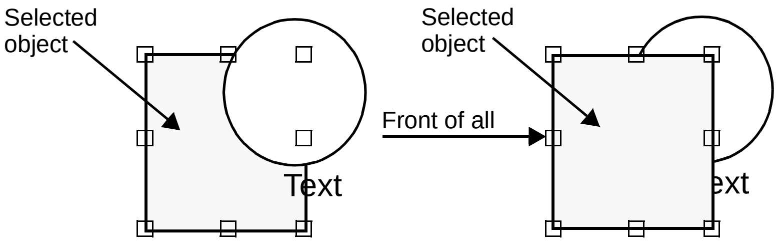


Figure 3-64. Example of Front of All

3.5.5.5 Back of All

Choose **Back of All** from the **Arrange** menu to move the objects you have selected back of the other objects in the display. All selected objects remain selected.

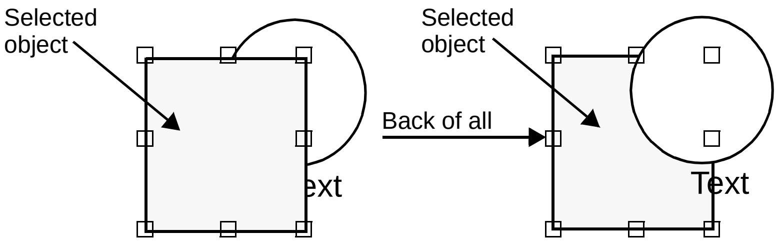


Figure 3-65. Example of Back of All

3.5.5.6 Mirror Horizontal

Choose **Mirror Horizontal** from the **Arrange** menu to create a mirror image in the horizontal plane of the objects you have selected. The original objects are then removed and the new ones mirrored horizontally. Each of the new objects is mirrored around the definition point.

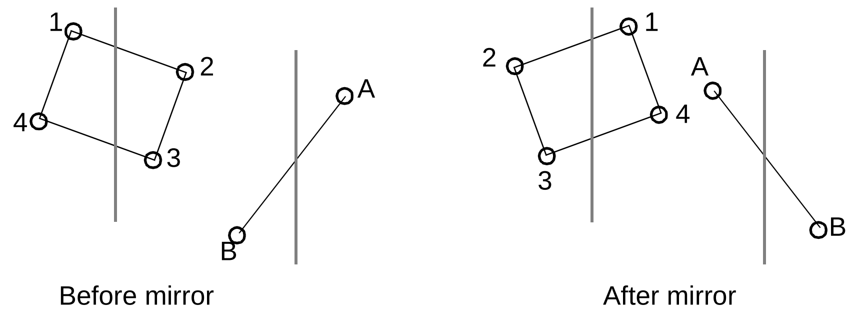


Figure 3-66. Objects mirrored horizontally

3.5.5.7 Mirror Vertical

Choose **Mirror Vertical** from the **Arrange** menu to create a mirror image in the vertical plane of the objects you have selected. The original objects are then removed and the new ones mirrored vertically. Each of the new objects is mirrored around the definition point.

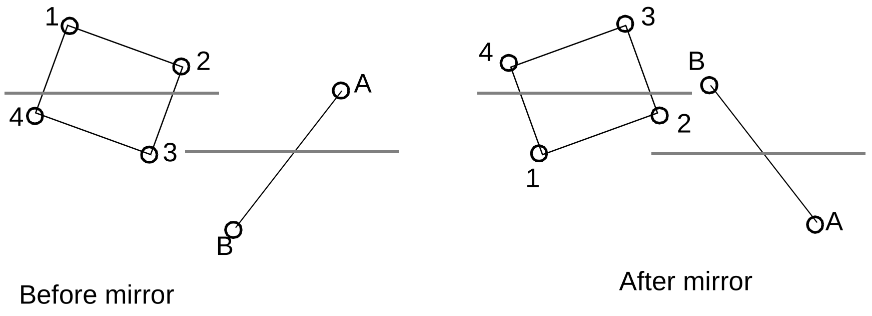


Figure 3-67. Objects mirrored vertically

3.5.5.8 Align Horizontal

Choose **Align Horizontal** from the **Arrange** menu to horizontally align the definition points of the objects you have selected in relation to each other. The first selected object is fixed in place, and the other objects are repositioned for proper alignment.

3.5.5.9 Align Vertical

Choose **Align Vertical** from the **Arrange** menu to vertically align the definition points of the objects you have selected in relation to each other. The first selected object is fixed in place, and the other objects are repositioned for proper alignment.

3.5.5.10 Distribute Horizontal

Choose **Distribute Horizontal** from the **Arrange** menu to evenly space the objects you have selected in the horizontal plane. The objects positioned to the left and the right ends are the fixed reference points. The other selected points are moved to provide equal spacing between each object.

3.5.5.11 Distribute Vertical

Choose **Distribute Vertical** from the **Arrange** menu to evenly space the objects you have selected in the vertical plane. The top and bottom objects are the fixed reference points. The other selected points are moved to provide equal spacing between each object.

3.5.6 Help

3.5.6.1 On Help

On Help tells you how to use the help facilities.

3.5.6.2 On Window

On Window tells you about the workspace in general.

3.5.6.3 On Keys

On Keys tells you how to use the function keys, mnemonics and keyboard accelerators.

3.5.6.4 Index

Index provides an index of all help information in the application.

3.5.6.5 On Version

On Version tells you the name and version of Display Builder.

Chapter 4 Runtime Operation

4.1 Operating Overview

The operator station screen is divided into areas that are each reserved for a specific purpose. The displays are presented in the **display area** when they are presented in **runtime**.

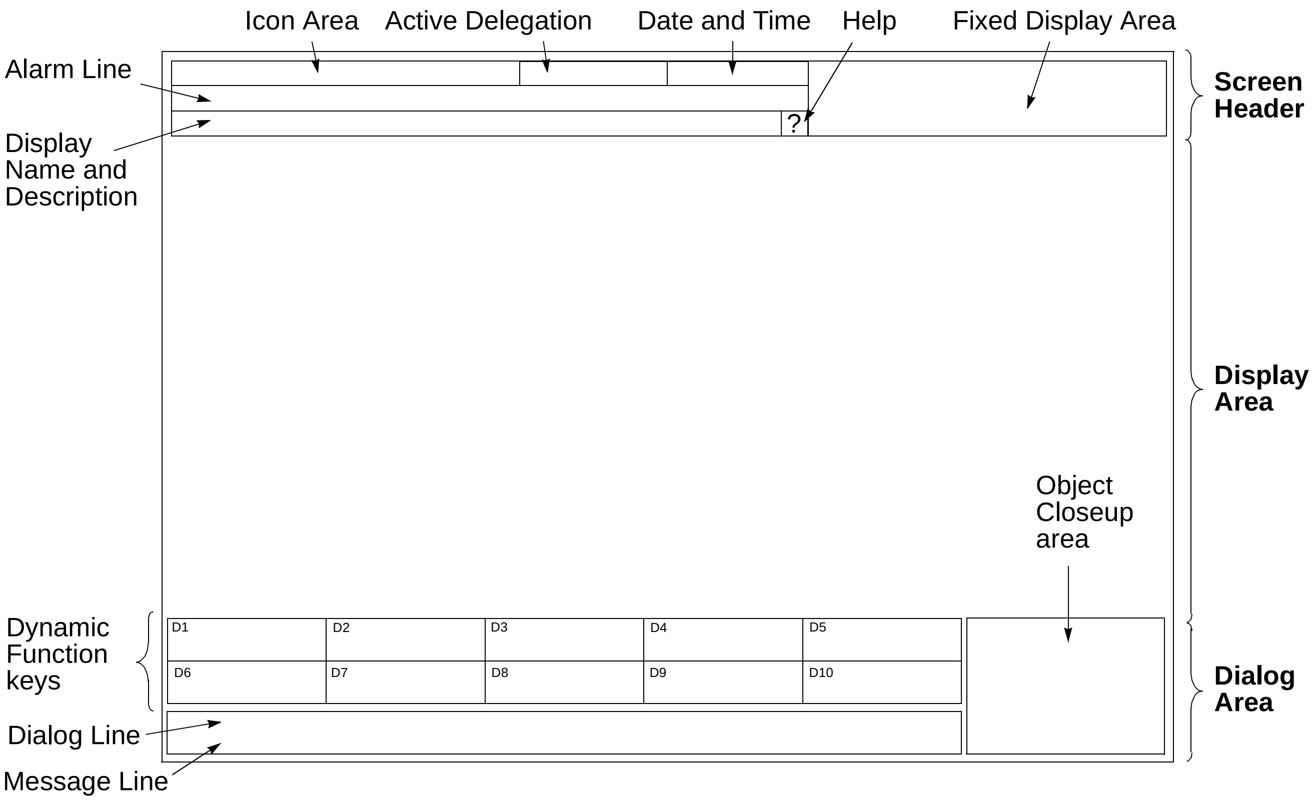


Figure 4-1. Basic Screen Layout

The **header area** contains the alarm line, the time, icons for printer status, the system alarm and the authority key. The display name and description are also part of the header area. There are two types of displays:

- **Base displays**, which close all previous displays on the display area before presentation in runtime. They cover the entire display area.
- **Overlap displays**, which are presented in front of other displays. The display can be of any size up to the size of a base display. The display name and description is presented in the display frame.

A display can be used both as an overlap and as a base display, depending on how you select it to be presented. If, for example, you select a base display with a **display link**, it can be presented as an overlap display.

The **dynamic function keys** are used to call up predefined displays, dialogs and applications. For each base display, you can define up to 10 dynamic function keys.

The **fixed display** is always presented on the screen. You can use the fixed display for important dynamic (using display elements) and static information that will always be available for the operator. The fixed display is built in the Display Builder.

The **dialog line** provides you with information about selected process objects and prompts for inputs.

In the **message line**, you get error messages and information relating to current activity.

Chapter 5 Maintenance

5.1 Error Messages

Display Builder uses dialog boxes to present error messages.

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